Analysing the competitive performance of the Eswatini sugar industry

by

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DECLARATION

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ABSTRACT

The primary objective of this study was to analyse the competitive performance of the Eswatini sugar industry, since 2001, and developing strategic recommendations for improved competitiveness of this industry. A five-step analytical framework was applied based on the Volrath-Porter approach recently followed by Boonzaaier and Van Rooyen (2017), Barr (2019) and Mtshiselwa (2020) for competitiveness analysis in southern African agribusiness.

Step 1 of the analytical framework involved defining competitiveness in the context of the Eswatini sugar industry. In this study the term was defined as 'the ability of sugar industry to be competitive by trading production in domestic and international markets and achieve sustainable business growth whilst striving to earn at least the opportunity cost of resources' (Freebairn, 1986, Van Rooyen, Esterhuizen & Botha, 2011; Dlikilili & van Rooyen, 2018). This definition provides a base for the analysis and measurement methods used.

The second step of the study was the empirical measuring of the competitive performance using the relative trade advantage (RTA) technique (Vollrath, 1991) as a measure of competitiveness. The data used was sourced from two reliable sources viz. FAOSTAT and ITC Trademap from 2001 to 2019. From these measurements trendlines were established and three phases were identified and analysed. Phase 1 shows generally increasing competitiveness with RTA figures (2001-2006) ranging from 1.5 to 2.9 for the FAO and 1.8 to 4.6 for ITC. During phase 2, (2007 - 2012) it showed a fluctuating "bubble type" trend by first increasing until 2009 and declining gradually to 2012. The competitive performance was noted with RTA values for FAO ranging between 3.8 to 3.4 inter alia due to economic meltdown and removal of the preferential trade arrangements benefitting Eswatini. Phase 3 shows recovery and sustained increasing competitiveness from 2013 onwards with rising RTA values of 3.4 to 5.2 for ITC and 2.9 to 4.9 for FAO.

The Eswatini sugar industry was also compared with its rivals internationally by measuring the RTA values over time (2001 to 2019) using the ITC data. Average RTA values from the past five years - allowing to compare relative competitiveness of an industry in context of the economy of the respective country - were obtained for the following respective countries: Brazil (5.04), Thailand (4.61), South Africa (3.56), Mozambique (2.09), Kenya (3.01), Malawi (2.03) and Zimbabwe (2.75). Brazil and Thailand showed to be the most competitive as opposed to the other countries. Eswatini (3.82) was found to be generally competitive when compared to its African competitors after South Africa. From these results it was concluded that an in-depth analysis was required to consider the various factors

impacting on the competitive performance of the Eswatini industry, which was conducted in steps 3 and 4.

The third step of the study involved ascertaining factors that influence the competitiveness of the sugar industry. Factors enhancing or constraining the competitive performance of the sugar industry of Eswatini were identified and analysed through qualitative methods by using focus group discussions and interviews with experts and executives along the sugar industry value chain. Through the Eswatini sugar executive survey (ESES), 48 factors influencing the competitiveness of the industry were identified and responses recorded on the Likert-scale (with 1 – constraining; 3 – neutral; and 5 – enhancing).

Step 4 of the study grouped the 48 factors influencing the competitive performance of the sugar industry into six Porter Competitive Diamond determinants. In general, the sugar industry rating score indicated four enhancing determinants being the demand conditions (3.54/5), related and supporting industries (3.45/5), government support and policy (3.41/5) and lastly the strategy structure and rivalry (3.36/5). The production and chance factors revealed to constrain the industry with 2.83/5 and 2.42/5 values, respectively. Principal component analysis (PCA) was carried out to identify variations and consensus in the views of respondents with regard to factors identified for each determinant. The results revealed that there were variations in opinions regarding the 48 factors. It is worth mentioning that the PCA results should be considered with care as the sample size was not optimal.

The different value chain components/players, grouped into two clusters which were primary producers and agribusiness, were analysed to obtain the variation in views within the chain. It was observed that the producers rated competitiveness performance lower than the agribusiness actors, as such there were differences in views among the respondents along the chain.

The last step applied the findings from the previous analysis, which reflected alignment between the producers and the agribusiness. It investigated proposed strategies that could be applied to enhance or sustain the competitiveness of the sugar industry. Industry strategies were formulated in collaboration with industry role players to improve competitive performance of the industry. In view of this, the importance of collaboration between all the value chain actors should be strengthened through information and business intelligence sharing, technological innovations and policy development and coordination between industry and government. New product development also needs attention to counter ‘anti-sugar movements’ and to grow local market demand. It was also proposed that the industry employ risk management strategies that will help to deal with the uncertainty of fluctuations of currencies. Emphasis was put on the role of government for continued negotiations and exploration of new markets for the industry as it contributes immensely to the

economy. Research on climate change was mentioned to improve competitiveness of the industry in future as it will help mitigate the effects on the sugar cane production.

From the analyses and findings of the research, some recommendations were made for further studies to improve the measurement and analysis of competitive performance of the Eswatini sugar industry. This included full value chain analysis, with representative participation of the different functional groupings, to conclude an in-depth investigation on the performance of various role players in the value chain, the linkages between sugar smallholders and the value chain. Also cost benefit application to support economically viable and financially affordable infrastructure development such as irrigation infrastructure and water storage facilities and road and bridges was recommended to expand the scope; and to consider the role of government policy on competitiveness performance.

OPSOMMING

Die hoofdoel van hierdie studie was om die mededingendheidsprestasie van die Eswatini-suikerbedryf sedert 2001 te ontleed en strategiese aanbevelings vir die verbeterde mededingendheid van hierdie bedryf te ontwikkel. 'n Vyf-stap analitiese raamwerk is toegepas op grond van die Volrath-Porter-benadering wat onlangs gevolg is deur Boonzaaier en Van Rooyen (2017), Barr (2019) en Mtshiselwa (2020) vir mededingendheidsanalise in Suider-Afrikaanse agribesigheid.

Stap 1 van die analitiese raamwerk behels die definisie van mededingendheid in die konteks van die Eswatini-suikerbedryf. In hierdie studie is die term as volg gedefinieer: 'Die vermoë van die suikerbedryf om mededingend te wees deur die produk in plaaslike en internasionale markte te verhandel, volhoubare sakegroei te behaal, en te streef om ten minste die geleentheidskoste van hulpbronne te verhaal' (Freebairn, 1986, Van Rooyen, Esterhuizen & Botha, 2011; Dlikilili & van Rooyen, 2018). Hierdie definisie bied 'n basis vir die studie se analise- en meetmetodes.

Die tweede stap van die studie was die empiriese bepaling van die mededingendheidsprestasie deur gebruik te maak van die relatiewe handelsvoordeel (*relative trade advantage (RTA)*) tegniek (Vollrath, 1991) as 'n maatstaf vir mededingendheid. Die data wat gebruik is, is afkomstig van twee betroubare bronne, nl. FAOSTAT en ITC Trademap van 2001 tot 2019. Uit hierdie data is tendenslyne vasgestel en drie fases is geïdentifiseer en ontleed. Fase 1 toon oor die algemeen toenemende mededingendheid met RTA-syfers (2001-2006) wat wissel van 1.5 tot 2.9 vir die FAO en 1.8 tot 4.6 vir ITC. Gedurende fase 2 (2007-2012) het dit 'n wisselende "borreltipe" -tendens getoon deur eers tot 2009 toe te neem en geleidelik te daal tot 2012. Die mededingendheidsprestasie is aangeteken met RTA-waardes vir FAO wat wissel tussen 3.8 en 3.4, onder andere as gevolg van ekonomiese ineenstorting en die opheffing van die voorkeurhandelsreëlings ten bate van Eswatini. Fase 3 toon herstel en volgehoue toename in mededingendheid vanaf 2013 met stygende RTA-waardes van 3.4 tot 5.2 vir ITC en 2.9 tot 4.9 vir FAO.

Die Eswatini-suikerbedryf is ook internasionaal met sy mededingers vergelyk deur die RTA-waardes oor tyd te meet (2001 tot 2019) met behulp van die ITC-data. Gemiddelde RTA-waardes van die afgelope vyf jaar - om relatiewe mededingendheid van 'n bedryf in die konteks van die ekonomie van die onderskeie lande te vergelyk - is vir die volgende lande verkry: Brasilië (5.04), Thailand (4.61), Suid-Afrika (3.56), Mosambiek (2.09), Kenia (3.01), Malawi (2.03) en Zimbabwe (2.75). Brasilië en Thailand was die mededingendste teenoor die ander lande. Die analise het aangedui dat Eswatini (3.82), na Suid-Afrika, oor die algemeen mededingend is in vergelyking met sy Afrika-mededingers. Die gevolgtrekking uit hierdie resultate is dat 'n verdere ontleding nodig is om die verskillende faktore

wat die mededingendheidsprestasie van die Eswatini-industrie beïnvloed, in ag te neem, wat in stap 3 en 4 gedoen is.

Die derde stap van die studie het betrekking gehad op die bepaling van faktore wat die mededingendheid van die suikerbedryf beïnvloed. Faktore wat die mededingendheidsprestasie van die suikerbedryf van Eswatini verbeter of beperk, is deur middel van kwalitatiewe metodes geïdentifiseer en ontleed deur fokusgroepbesprekings en onderhoude met kundiges en bestuurders in die waardeketting van die suikerbedryf te gebruik. Deur middel van die Eswatini suiker uitvoerende opname (*Eswatini sugar executive survey (ESES)*) is 48 faktore wat die mededingendheid van die bedryf beïnvloed geïdentifiseer en die antwoorde op die Likert-skaal aangeteken (met 1 - beperkend; 3 - neutraal; en 5 - verbeterend).

Stap 4 van die studie het die 48 faktore wat die mededingendheidsprestasie van die suikerbedryf beïnvloed, in ses *Porter Competitive Diamond*-bepalers gegroepeer. Oor die algemeen het die suikerbedryf se graderingstelling vier bepalende faktore aangedui: Die vraagstoestande (3.54/5), verwante- en ondersteunende bedrywe (3.45/5), regeringsteun en -beleid (3.41/5) en laastens die strategiestruktuur en wedywering (3.36/5). Die produksie- (2.83/5) en toevallige faktore (2.42/5) waardes dui daarop dat die bedryf hierdeur beperk word. Om variasies en konsensus in die sienings van respondente te vind, met betrekking tot faktore wat vir elke determinant geïdentifiseer is, is hoofkomponentanalise (*Principal component analysis (PCA)*) uitgevoer. Die resultate het getoon dat menings oor die 48 faktore varieer. Dit is belangrik om kennis te neem dat die PCA-resultate versigtig oorweeg moet word, aangesien die steekproefgrootte nie optimaal was nie.

Die verskillende sienings binne die waardeketting is ondersoek nadat die rolspelers in twee groepe, nl. primêre produsente en agribesigheid, verdeel is. Die analise het aangedui dat die produsente die mededingendheidsprestasie laer skat as die agribesigheidrolspelers. Daarom blyk dit dat daar binne die waardeketting verskillende menings is.

Die laaste stap het die bevindings van die vorige analise toegepas, wat die belyning tussen die produsente en die agribesigheid weerspieël. Voorgestelde strategieë om die suikerbedryf se mededingendheid te verbeter of te handhaaf is ondersoek. Bedryfstrategieë is in samewerking met rolspelers in die bedryf geformuleer om die mededingendheidsprestasie van die bedryf te verbeter. Met dié is dit belankrik dat samewerking tussen al die waardekettingrolspelers versterk word deur die deel van inligting, tegnologiese innovasies, en beleidsontwikkeling en koördinering tussen die industrie en die regering. Ontwikkeling van nuwe produkte moet ook aandag kry om 'anti-suikerbewegings' teen te werk en om die plaaslike markaandeel te laat groei. ‘n Verder voorstel is dat die bedryf risikobestuurstrategieë gebruik om die onsekerheid gekoppel aan die wisselvalligheid van

wisselkoerse te hanteer. Daar is klem gelê op die rol van die regering vir voortgesette onderhandelinge en die verkenning van nuwe markte vir die bedryf, aangesien dit 'n groot bydrae tot die ekonomie lewer. Navorsing oor klimaatsverandering is genoem om die mededingendheid van die bedryf in die toekoms te verbeter, aangesien dit die uitwerking daarvan op die suikerrietproduksie sal help verminder.

Uit die ontledings en bevindings van die navorsing is 'n paar aanbevelings gemaak vir verdere studies om die meet en analise van mededingendheidsprestasies van die Eswatini-suikerbedryf te verbeter. Dit het ‘n volledige waardekettinganalise ingesluit, met verteenwoordigende deelname van die verskillende funksionele groeperings, om 'n diepgaande ondersoek af te handel oor die prestasie van verskillende rolspelers in die waardeketting, en die skakeling tussen suikerboere en die waardeketting. Daar is ook aanbeveel om kostevoordeel-toepassing te gebruik om ekonomies lewensvatbare en finansieel bekostigbare infrastruktuurontwikkeling te ondersteun, soos besproeiingsinfrastruktuur, wateropbergingsfasiliteite, paaie, en brûe om die omvang te vergroot; en om die rol van regeringsbeleid ten opsigte van mededingingsprestasie te oorweeg.

DEDICATION

I wish to dedicate this master's thesis to my entire family, in particular my parents, Mr and Mrs Brix and Jabu Simelane, my siblings and my children who were my source of inspiration and constant encouragement. Without their undivided support, this work would not have been successful.

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COMESA	Common Market for Eastern and Southern Africa
DAFF	Department of Agriculture, Food and Fisheries
DRC	Domestic Resource Costs ratio
ESA	Eswatini Sugar Association
ESWADE	Eswatini Water and Agricultural Development Enterprise
EU	European Union
GCI	Global Competitiveness Report
GDP	Gross Domestic Product
IFC	International Finance Co operation
IMD	Institution Management Development
LUSIP	Lower Usuthu Smallholder Irrigation Project
MT	Metric Tonnes
NCT	New Competitive Theory
NTT	New Trade Theories
RCA	Revealed Comparative Advantage
RTA	Relative Trade Advantage
RSSC	Royal Swaziland Sugar Corporation
SACU	South African Customs Union
SCB	Social Cost-Benefit ratio
SLA	Service Level Agreement
TRQ	Tariff Rate Quota
WEF	World Economic Forum

CHAPTER 1: INTRODUCTION

1.1 Background

Sugarcane is a crop mostly grown in the tropical countries with approximately 110 countries producing it from either cane or beet globally. Above 70 percent of the sugar produced worldwide is consumed domestically and the surplus is traded around the world (Noyakaza, 2019). On average, the crop accounts for almost 80 percent of global sugar production. Currently, the global production exceeds 170 million metric tons a year with Brazil being the largest producing and exporting country in the world, accounting for about 45% of global exports (Sugar world market and trade, 2019). The biggest producers globally are Brazil (18.6%), the European Union (13.7%), India and China (Tsengiwe, 2014). Africa accounts for 5.7% of world sugar producers. Figure 1.1 below show the sugar cane producing countries.

Figure 1.1: Sugar cane producing countries

Data source: www.sucrose.com

Most of the sugar sold worldwide is traded under preferential trade agreements between trading countries. Since only minor quantities of world production is traded freely, small variations in production and government policies tend to have large influences on world sugar markets. Due to this influence, sugar prices have been unbalanced in the world market (Taylor, 2017).

The Eswatini sugar industry is part of the major exporters in the country and contributes almost 10% of the national GDP (GAIN Report, 2017). The industry employs over a third of the private sector employees and nationally it absorbs just over a tenth of the country' employment earnings (Central Bank of Eswatini Report, 2008/9:6). Evidently, the sugar sector is valuable to the economy of Eswatini, the fourth largest producer in Africa and ranked 25th largest producer worldwide (GAIN Report, 2017).

In the Global Competitiveness Reports (GCI) (2017-2019/11) prepared by World Economic Forum (WEF), Eswatini was positioned number 121 out of the 141 countries in 2018/2019, compared to 120 out of 140 in 2017/2018. As the country presented mixed score results across all the twelve pillars of WEF competitiveness, it ranks behind by some distance from its Southern African peers; namely South Africa (67) and Namibia (100), to mention a few. The low ranking is a general concern as it implies a reduced ability to be competent in the global environment and a setback to draw Foreign Direct Investment. Hence, there is a need for the country to formulate policies that will see Eswatini achieving an improved Global Competitiveness ranking (World Economic Forum, 2019). This study will focus on considering the competitiveness of the Eswatini sugar industry.

Competitiveness is a useful concept that has evolved over time, with the current definition speaking to an industry's ability to maintain and strengthen its position as a preferential trade partner over a sustained period of time as a result of a competitive advantage (Smith, 1776; Ricardo, 1821; Freebairn, 1987; Porter, 1990; Cho and Moon, 2013, Barr,2019). Competitive has also been viewed as an important tool for the long term sustainability of the agricultural sector (Van Rooyen et al 2011). Competitive analysis has become an area of interest recently. Evidently, there has been increase in the studies conducted on both the micro-and macro level which agricultural relate. These include studies by Esterhuizen (2006), Mashabela and Vink (2008), Dlamini (2012), Jafta (2014), Boonzaaier (2015), Van Rooyen ( ), Angala (2015), Abei (2017), Mtshiselwa (2020)

It should be noted that there are four business components comprising the sugar industry: three sugarcane millers, four sugarcane estates, 38 large scale sugarcane farmers, and over 2,500 small scale farmers (ESA, 2016). Estates owned by millers contribute a major share of sugarcane production at 49% with total production of 4,9 million tonnes of sugar cane, followed by large producers contributing 18 percent, medium scale producers at 12% with total production of 60,000 tonnes per annum of sugar cane and finally the small scale growers accounting for 21% of production from an area measuring 16,000 hectares and total production of 2.5 million tonnes of sugar cane (Sugar Manufacturing Industry in Eswatini, 2019 Report). The industry is centrally regulated by the Eswatini Sugar Association (ESA) and runs all sales and marketing to international markets (EU, SACU COMESA and world market).

The Royal Swaziland Sugar Corporation (RSSC) is one of the major firms comprising of two main sugar mills, Mhlume and Simunye producing about 430,000 tonnes of sugar per season. These two mills are owned by Tibiyo Taka Ngwane and the Eswatini Government being the major shareholders, controlling over 50% of the company. TSB Sugar International and Booker-Tate Limited are the second largest shareholders, The Coca Cola Company and the public are the minor shareholders. Two thirds of the total Eswatini sugar is produced by RSSC, producing 430,000 tonnes of cane per season and employs over 3,500 people. Ubombo Sugar Limited is the second largest sugarcane company with an estimated production of around 230,000 tonnes per year. The company is supplied by 190 registered growers, which include small holder associations and individual growers. Independent farmers supply 65% of the sugar cane and the other 35% comes from the farm owned by the company. The third largest independent sugar estate is Tambankulu, producing 62,000 tonnes of sugar per annum under 3,816 hectares of land (Mbendi Information Services Sugarcane Farming in Swaziland).

Accordingly, the Eswatini sugar sector comprises three major millers with a collective yearly production capacity of 8000 000 tonnes. Sugar estates, large and medium sized, as well as small sugar cane growers comprise the Eswatini sugar industry, with the Eswatini Sugar Association, formally known as Swaziland Sugar Association (SSA), as the regulator and marketer to the world markets.

The sugar industry directly employs about 16,000 workers, and more than 35% of the workers in the agriculture sector is employed by the industry (Ministry of Enterprise and Employment, 2005). Evidently, the sugar industry makes a valuable contribution to the economy of the country. Eswatini exports its sugar to the European Union (EU), United States, SACU and COMESA. In 2017/2018, the country exported 525,000 MT and is expected to increase for the year 2018/2019 to 710,000 which is 35%. SACU is the major market for Eswatini, which accounts for about 45 - 70% of the total sugar sales, while sugar exported to the EU accounts for 21 percent. In 2017/2018, exports were not impressive due to a decline in sales in the EU and SACU (Gain Report, 2017/2018). The SACU, which is the key market as mentioned above, was flooded with global sugar imports and greatly affected this market, resulting to displacement of Eswatini sugar.

From the above it should be noted that in a business perspective around 30% export orientation, the Eswatini sugar economy is linked to the global trade environment and are thus challenged to perform competitively. Therefore, it places a strong demand on the sugar industry serving the food and beverage sector to be increasingly competitive, responsive, flexible and efficient.

According to Dlamini (2012), globalisation and liberalisation of world economies has given rise to the emergence of new threats and opportunities that face the agribusiness firms globally, and this has necessitated the on-going efforts by both business and government to evaluate and understand with the aim of improving the firms, sectors and industries' international competitiveness. Competitiveness is viewed as the key for sustained trade in the global economy (Porter, 1999) and in the value chain context (Webber & Lambaste, 2011; Dlikilili & van Rooyen, 2018). In order for the sugar industry to survive in the uneven economic environment, it is fundamental that they are competitive. Recently, the sugar industry's performance has shown some improvement due to continuous development in the LUSIP project for sugar cane production. There has also been a constant recovery from the 2015/2016 El Nino drought after an improvement in climate conditions. This resulted in improved sugar cane production rising by 14.7% to 6.20 million MT in the year 2018/19 harvesting season, from 5.41 million MT in 2017/18. The sugar industry is regulated by institutional structures (Mhlanga-Ndlovu & Nhamo, 2017), there are regulations and policies that guide the production of sugarcane which include the Draft Land Policy, the Water Act, Environment Management Act, and Irrigation Policy. In addition, the Environment Management Act is used to promote efficient, sustainable and equitable usage of natural resources supporting the production of sugarcane.

The current research focuses on the challenge of increased sustained competitiveness and analyses the performance of the Eswatini sugar industry in this context. A theoretical construct and analytical framework and data sets fitting the Kingdom of Eswatini situation will be developed with recommendations to improve competitive performance strategies in mind.

1.2 Problem statement

The Eswatini sugar industry has generally been performing positively in the business environment as far as exports and returns are concerned. Evidently, the sugar sales increased from two billion ZAR lilangeni in 2006 to 4.6 billion ZAR/lilangeni for the year 2015/2016 (Eswatini Sugar Association Annual Report, 2015/2016). However, with the economic reforms, in particular the European market, the industry has been affected and revenue dropped to 4.2 billion in the year 2017/2018 (Eswatini Sugar Association Annual Report, 2017/2018). Sugar sales have decreased by 36% because of the decline in value, as well abolition of EU production quotas in October 2017. Returns to Eswatini from the EU are expected to continue to fall following the abolishment of sugar beet restrictions.

The sugar sales in 2006/2007 were recorded at 636.667 tonnes and total sales of E1.9 billion, a drop in 2009/2010 by 595,143 with total sales of E2.4 billion. In 2018 it dropped by 22% to 552,136 with total sales of E4.2 billion. Since the revenues for the industry is determined by the exchange rate, in

2009/2010, the Euro and USD depreciated against the local currency (Lilangeni) by 12% and 14% respectively, which resulted in a decline of the revenue (Eswatini Sugar Association Annual Report, 2017/2018).

Eswatini Sugar Association, a body representing both millers and growers, had also faced some difficulties in securing markets that offer better remunerative prices such as in the previous years. The SACU, which is the largest market, displaced Eswatini sugar due to competition from the world market. The volumes sold to SACU market dropped by 13.5% and returns dropped to E4.2 billion from E4.6 billion, which is 8.8% (Eswatini Sugar Association Annual Report, 2017/2018). Since Eswatini is not the only country exporting sugar to the four major markets (EU, US, SACU and COMESA), the market is highly competitive. Another challenge facing Eswatini sugar industry is ensuring its growth ability on a sustainable basis (Gass, 2012).It is therefore, important that the country strive to be competitive in the markets for the growth of the industry.

With the intensifying competition in the world and regional markets, economists and investors, business strategists and policy analysts have, over the past 20 years, developed a keen interest in the concept of competitive performance. The annual World Competitive Report of the World Economic Forum is a keenly awaited document showing progress and decline in the competitiveness position of around 140 participating countries. No general review; however, is published on industry-based performances. A gap is thus recorded in a substantial and analytical based competitiveness performance analysis and industry-based business intelligence of this industry. The sugar industry has experienced fluctuations with regards to production and sales. These has been brought about by political and policy changes, as well as factors that are external to the production environment. This study will contribute to fill such a gap.

In this research report the focus is directed at applying the concept of competitiveness to the Eswatini sugar industry. The research problem to be dealt with will be framed in terms of how competitive the industry performed over recent years; which problems and constraints are hampering the industry; and which methods should be used to realistically measure and analyse the competitive performance at industry level over time. Questions to be probed will include:

- How to define competitiveness in the Eswatini context?
- How to measure competitive performance over time?
- What trends are emerging and did events such as the 2008/9 economic meltdown impact on Eswatini’s performance?
- What factors impact positively or negatively on such performance?

- Are there differences of views between different functions in the value chain and what are the natures of such differences?
- What can strategically be done to improve competitive performances?

To do such an analysis, applying the appropriate measurements and analytical framework, will require attention i.e., does conventional competitive analysis, based on comparative advantage positions, apply or does it require adaptations and/or new constructs to accommodate the developmental nature of the Eswatini economy? What data base will be used and are current data systems sufficient to allow the required analysis?

In recent years the Centre for Agribusiness, Stellenbosch University, produced a number of collaborative agri-food industry-based studies on competitiveness in the Southern African environment and this study will consider some of the applied procedures and methods for the Eswatini sugar competitive analysis.

1.3 Research objectives and questions

1.3.1 Primary objective

To determine and analyse the competitive performance of the sugar cane industry over time and to develop recommendations for an improved competitive strategy of this industry.

1.3.2 Secondary objectives

- To define and apply the concepts of competitiveness for the Eswatini sugar industry in context of the Eswatini economy.
- To measure competitive performance trends over the identified period.
- To identify influencing factors of competitiveness in the sugar industry.
- To identify the strengths and constraints affecting competitiveness of the industry.
- To consider value chain differences in the industry.
- To suggest strategic approaches to improve the industry's level of competitiveness.

1.3.3 Research questions

This research will endeavor to respond to the questions mentioned below:

- What theoretical construct is appropriate to define and measure competitive performance of the sugar industry in Eswatini?
- What methodologies, tools and data systems can be of use in measuring competitiveness in this industry?

- How can the factors contributing to the competitiveness be determined?
- How can competitive performance be analysed, inter alia noting value chain differences, and be strategically improved?

1.4 Hypotheses

Based on the problem statement above this study will be guided by the following hypotheses:

- H1: The competitive performance of the Eswatini sugar industry is not only dependent on single factors affecting trade performance, such as market prices for produce; or production cost; or exchange rates, or climatological factors. It is rather determined by sets of enhancing and constraining factors affecting the industry value chain and its different components, creating or reducing competitive advantages. This could entail actors related to, amongst others, production factors endowments and productivity levels; domestic and international market conditions and related market strategy; the strength of supporting industries; government support; and factors such as exchange rate fluctuations, health situations, etc.

  Leading from H1 it can be stated that:
- H2: Complex and integrated strategies are required, at industry value chain level, to enhance competitive performance.

1.5 The importance of the study

As the Eswatini sugar industry is required to function in an increasingly competitive global environment, it is critical to understand the factors that impact towards its competitive performance. As the sugar industry is export driven, fair competition in the global market is difficult as the world sugar prices remain suppressed due to an oversupply of sugar and have negatively impacted on the profitability. It is crucial that its performance is analysed and evaluated to define better action plans that will improve the industry's performance and continue contributing towards the national economic growth.

1.6 Delimitations of the study

In order to reach the purpose and answer the research question of this study, the competitive performance at industrial value chain level from a business competitiveness approach (Porter, 1999), was analysed. The research did not focus on firm level applications and does not analyse firm level financial and structure impacts; and of price and costs movements and its impact on the firm level business strategy. Additionally, it does not determine and analyse financial performances along the value chain. The research was only limited to the RTA method and did not apply the other methods of measuring competitiveness.

The economic and social impacts are also not fully identified and analysed - that would require different analytical frameworks and methodologies (such as Policy Analysis Matrix, Economic Cost Benefit Analysis) and points of departure. This will be too extended to cover in this study. The focus of this study was not on policy analysis, but rather on improved industry level business intelligence to support sustained competitive trade performances. Recommendations for such research to support a comprehensive position statement on competitiveness policies for the Eswatini sugar industry is made in Chapter 6.5.

1.7 Structure of the study report

The study layout is outlined below:

- Chapter one presents the background of the study which includes the problem statement, the research focus, objectives and questions, the relevant hypotheses, and the delimitations.
- Chapter two reviews the literature relevant to the evolution of competitiveness theory and competitiveness analyses; and situates this in context of the Eswatini sugar industry. Additionally, the definition of competitiveness is also established, previous studies conducted in competitiveness reviewed and the various measurement techniques evaluated.
- Chapter three outlines the analytical framework, methodology, as well as data requirements.
- Chapter four highlights the descriptive overview of the Eswatini sugar industry. It gives historical background on the evolution of the sugar industry. It also presents statistical data on production, sales and volumes of sugar exported, as well as the structure of entities involved in the industry.
- Chapter five focuses on the result findings and interpretation of the research.
- The last chapter, Chapter six, provides conclusions, summarises the key findings and recommends possible strategies to improve the competitiveness performance of the Eswatini sugar industry.

CHAPTER 2: COMPETITIVENESS IN AGRIBUSINESS: LITERATURE REVIEW

2.1 Introduction

This chapter seeks to define an appropriate the theoretical construct for the study. It firstly provides a summary of the concepts and evolution theories of competitiveness. This will be carried out through reviewing the relevant literature that will respond to the stated research objectives and hypotheses of the study.

2.2 Evolution of competitiveness theories

Trade is viewed as an appropriate starting point to analyse competitiveness in this study, as the Eswatini industry is highly integrated in regional and global trade and finds it competitiveness in that context. This section reviews the evolution of the trade economic theory and its links to competitiveness. From this an application to the analysis of the Eswatini sugar industry will be proposed. The development of competitiveness theory from Adam Smith (1776) to Michael Porter (1990) is shown in Figure 2.1.

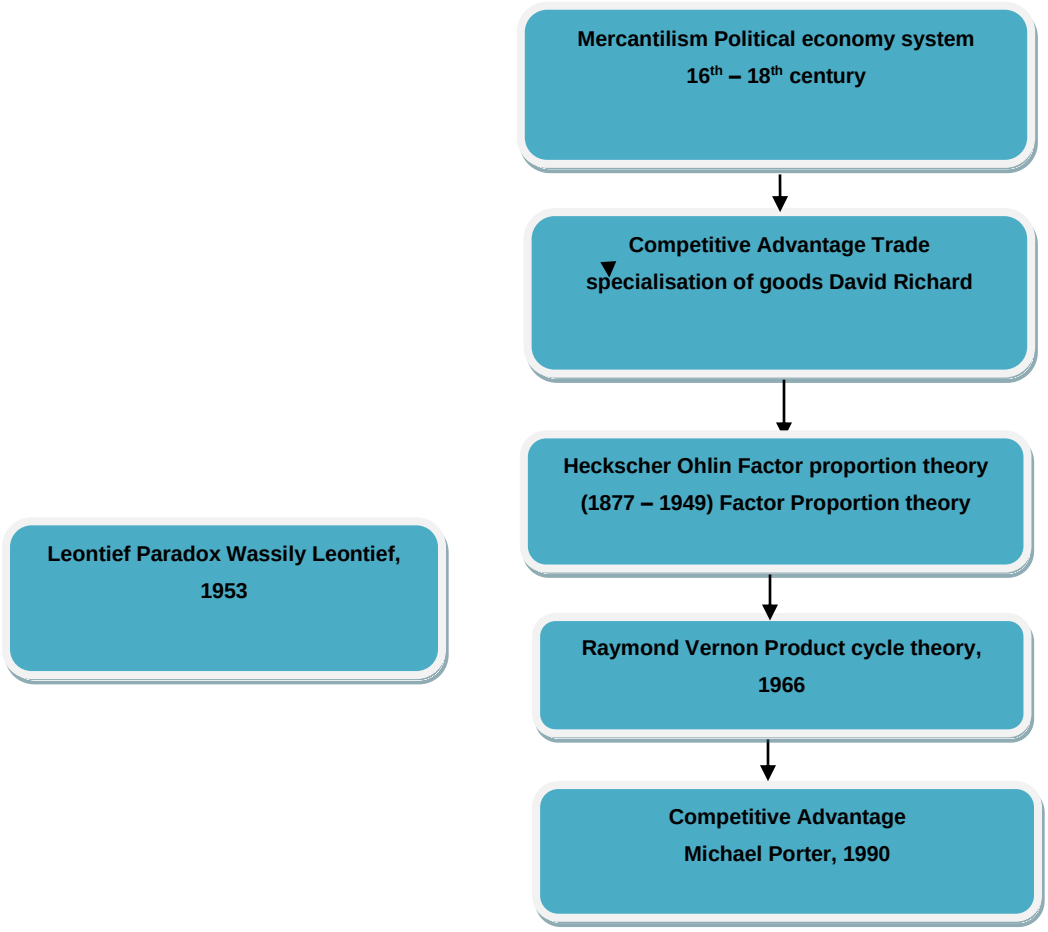

Figure 2.1: Evolution of competitiveness theory from Adam Smith to Michael Porter.

Data source: Cho and Moon, 2013, Angala, 2015, Barr, 2019

2.2.1 Mercantilism

Mercantilism is a political economy system that was developed by the European nations from the 16th century to the 18th century. In this theory, the government controls the economy and trade for the purpose of promoting domestic industry. Theory advocated strict government control of economic activity which is the zero-sum game, as gain from trade was at the expense of other nations. The initial thought of this theory was that if the country exported more than it imported, the economy of that country would be stronger. So many European countries maximised their exports and limited their imports through tariffs. In the process, it was assumed that the country's wealth would be accumulated through gold and silver. Mercantilists' concern was surplus in trade balance rather than maximising trade as it results in inflow of precious metals including silver and gold. This results in an increase in money supply, ultimately leading to inflation. This theory has been modified and refined over time.

2.2.2 Absolute advantage

This theory was developed in 1776 by Adam Smith, explaining why countries engage in global trade. Worth noting is that Wealth of Nation (1776), as stated by Smith, countries should manufacture goods that they are competent to produce and trade for the goods they are unable to produce. He viewed trade as a system where everyone involved benefit. Adam Smith had a problem with the mercantilism theory which did not promote trade amongst nations but within a country. In his argument, Smith pointed out that trade between countries was beneficial and assumes that there is an absolute balance among countries. In his view, a country should export goods it produces at the lowest costs and import those produced at highest costs. He emphasised that a country should concentrate on what it can do better based on the natural resources available through specialisation and division of labour.

2.2.3 Comparative advantage - linking trade theory to competitiveness

This is an economic concept that was used by David Ricardo (1817), to explain the ability of an economy to manufacture products at lower cost opposed to that of competitors. Ricardo stated that countries must specialise on goods where they are more efficient and import the goods that they are less efficient at producing. In this concept, a country can trade goods at lower prices than its rivals and still realise stronger sales margins. According to Krugman and Obstfeld (2003), it is prudent for a country to limit itself to such products, notwithstanding the absolute cost advantages of other producing goods and service. Additionally, a product comparative advantage for a country can change over the years due to changes in determinants that include; demand patterns, resource endowments, business practices and technology, specialisation and government policies.

2.2.4 Heckschel-Olin theory

This theory was developed as a modification of David Ricardo's comparative advantage theory (Todaro, 2007) by Eli Heckesher 1919 and Bertil Ohlin 1933. This theory is also driven by the factor of endowments and explains the patterns of trade between countries regarding production, labour and capital (Sodersten, 1984). It suggests that countries should export commodities they can capably and plentifully produce. In Blaug, Mark (1992), pointed out that a country will trade goods that require cheap and abundant production factors and import commodities which use scarce factors of production or goods it cannot produce efficiently. It assumes that there are similar tastes, technologies and demand between two trading countries in related endowment factors (labour and capital). The variances in the primary factors ultimately result in differences in the prices of goods. Labour intensive

commodities will be exported to a labour rich country and as such, the capital-intensive goods will be exported by nation rich in capital.

2.2.5 The Leontief Paradox

This theory was suggested by an American economist Wassily Leontief (1953), as the most important development in the competitiveness theory and revised Ricardo's theory. This theory made an example of the US which is said to have enough capital in comparison with other countries, which then export goods that require high capital investments and import the goods that require a substantial amount of labour. In view of this, Leontief revealed that US exports require less capital than US imports since it has a special advantage of manufacturing new and novel products. More people were also employed. Technological differences were also considered by Fishes and Marshall (2008) to lead to productivity differences, which then influences international trade patterns. This theory considers only capital and labour inputs, leaving out natural resource inputs.

2.2.6 Product Cycle theory

This theory was pioneered by economist Raymond Vernon in 1966 and responded to the malfunctioning of the Heckscher-Ohlin theory to take note of global trade patterns and differs from the previous trade theories. It focuses on the manufactured products and puts less emphasis on the comparative cost advantages concept. It mainly focused on the impact of technology on production cost. This concept emphasises the point that a country starts by trading goods and then partake in foreign direct investment as goods move through various stages. The product cycle is better explained in four phases, from the development stage until it reaches maturity. As a product matures, there is an increase in competition and sales and production stagnate or falls thus, affecting the flow and direction of exports and imports. This is characterised by a trend towards declining sales and profits but can maintain some profit margin.

2.2.7 New trade theories and competitiveness

The so-called 'new trade theories' (NTT) is a comprehension of economic models describing and analysing trade and strategic industry development, based on the 'new growth theory' (NGT), which was developed in the 1970s to the 1990s to interpret evolving and new trends, inter alia related to the opening-up of markets and globalisation prospects, the collapse of socialism and central economic planning and to forecast evolving international trade business patterns (Dicken, 1998; Poon, 1997). It was thus a response on the Ricardo comparative advantages theory that failed to explain many trade

movements sufficiently. The new growth theory indicates that industries should invest in knowledge and create strategic advantages, as opposed to relying on resource endowments and to increase productivity. These theories originate from the traditional neoclassical trade and are based on comparative advantage principles pointing out the differences between nations' resource endowment (Ezeala-Harrison 1999). As suggested by Krugman (1979) and Helpman and Krugman (1985), countries should furthermore specialise on the commodities being produced due to increasing returns to scale, even though countries have the same factor endowments. This thinking thus extends the traditional comparative advantage principle to accommodate growth generating factors such as technological innovation and economies of scale.

2.2.8 New competitiveness theory – from 'comparative advantage' to 'creating competitive advantage' and the Porter Competitive Diamond model

Work by Michael Porter (1990, 1998), built on the NTT and NGT and redirected strategic thinking about nations, industries and firms and their competitiveness. His theory is based on the ability to create competitive advantages through strategic planning, investments and execution leading to increased productivity and highlights the importance of a collection of industries (product grouping/clusters), where one company's competitiveness links with the performance of other companies and other producers tied together in the value chain; and of customer-client dealings, in global, regional and local contexts. Porter's effort has led to the ability to measure and identify key components and their relatedness, influencing competitiveness and the development of approaches for its achievement. With the New Competitive Theory (NCT) the comparative advantage concepts was thus extended to how to create, through strategy, 'Competitive Advantage' positions. While not ignoring the comparative advantage thinking, the competitive advantage concept allows a positive and stronger business focus, rather than normative economic focus and emphasises investment scope and productivity applications through strategic decisions and designs (Van Rooyen & Boonzaaier, 2017).

As defined by Porter (1985), competitive advantage are any business benefits that a company (or industry) may have over its rivals, which may eventually lead to higher profits and sales for the company. It can be achieved when a company will be able to maintain its superiority over time against its rivals. Ferrell (2012), defined competitive advantage as when a company does better than its competitors with a drive to provide better service to its customers. The importance of competitive advantage is the benefits it brings for the firm over its competitors to improve productivity and the profitability at reduced cost. Gutha (2009), argued that competitive advantage is the benefit a

company has over its competitors obtained through offering buyers greater value, which could be through cheaper prices or through the provision of greater benefits justifying the higher prices.

The Porter Competitive Diamond: Four classes of country attributes identified by Porter (1990) in the NCT (referred to as the Competitive Diamond), highlight the fundamental conditions for formative competitive advantage (Figure 2.2). These attributes or determinants of competitiveness are factor conditions; including production factors such as natural resource endowments and attributes; demand conditions, focusing on markets; supporting industries; industry structure, rivalry and company strategy. He included two more 'external' factors which are: government policy and chance factors. These two factors complement and support the system of competitiveness without creating a lasting competitive advantage per se, rather an enabling environment and opportunities. The Porter determinants are described in detail below.

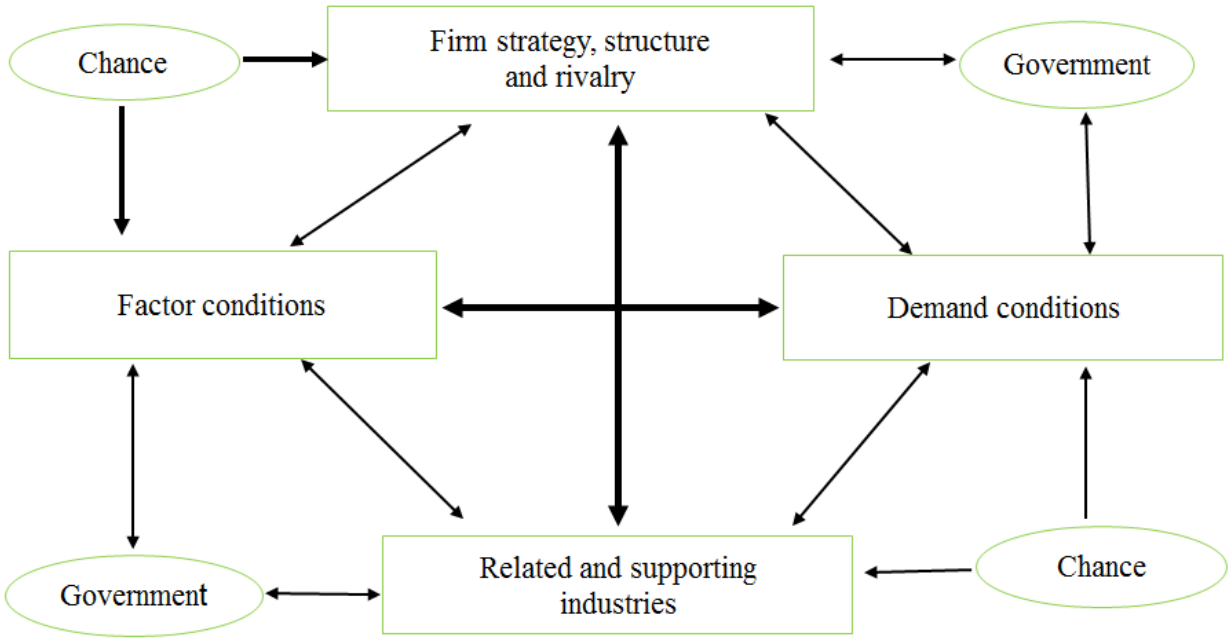

Figure 2.2: Porter's Competitive Diamond Model.

Source: Porter, (1990)

The NCT and competitive advantage concept is further clarified below in terms of the Competitive Diamond determinants:

2.2.8.1 Production factor conditions

The Neo-Classical trade (traditional) theories describe resource endowments such as labour, capital and land as factor conditions. There is a distinction between the different resources such as knowledge, human, infrastructure, capital, as well as physical resources, as outlined by Porter (1990). He further breaks down factor conditions into advanced and basic factors that could be general or specialised. Basic factors of production are endowments which include; raw materials water resources, natural potential, land, unskilled labour, climatic conditions, etc and are 'inherited' to be used directly during the process of production. However, advanced factors are created through innovation and reinvestment to particular factors, which are as a result of strategic planning and decision making including the basic factors that could shape the basis of a sustained competitive advantage of a nation.

2.2.8.2 Demand conditions

Porter (1990), explains the international competitiveness of countries through a primary focus on the differences in demand as opposed to similarities and market access based on these. His view is that both the complexity of the local buyers as well as the size of the local demand are source competitive advantages for a country, and a firm's response to the needs of the buyers is directly influenced by the factors that shape home demand. Therefore, to remain relevant, home country firms find themselves having to constantly upgrade their competitive situations to be able to respond to the demands for high quality products and services. While Porter emphasises local markets, this thinking can be extended to all global markets (Esterhuizen, 2006). According to Krugman and Obstfeld (2003), recent theories on trade clarifies the existence of different demand circumstances in countries and these result in the existence of variable structures of demand that can determine location economies of higher returns.

2.2.8.3 Firm strategy, structure and rivalry

The strategies of a company, its structure as well competition with its competitors, are determining factors of local competitive advantage according to Porter (1990). He emphasises on the point that the national environment, to a larger extent, influences the firm's strategies and structures, and that different sectors of business in various countries have systematic variations that decide competition and competitive advantage which is driven by rivalry, and has the opinion that domestic rivalry gives birth to cost competitiveness and innovation and improved quality.

Although firms get to compete internationally, countries too in some way can be said to be competing since it is their competitive advantage that influences the competitiveness of a firm (Porter, 1990).

However, he terms countries' international trade engagement as a negative sum game, a contrast with the widely accepted notion that both parties benefit from both importing and exporting referred to as the positive sum game.

2.2.8.4 Related and support industries

The importance of this factor cannot be overlooked in the sense that success of one industry in the international markets often results in other related or supporting industries gaining a positive advantage. Such is the case in industries that can together utilise and coordinate some of their activities in their supply chain or their goods that are complimentary. The existence of related and support industries is best explained by the availability or lack of international competition of supporting and supplying industries. Innovation and internalisation are strengthened at much later stages of the value chain system by competitive supplying industries (Dagmar, 2001; Webber & Lambaste, 2011).

Among the contributions of Porter's Diamond Theory, the introduction of this determinant of local competitive advantage was major, and that it is all the different components of external economies of supportive and related industry groups and value chain put together that are real sources of competition. He firmly considers that the non-existence of such clusters, which become nurturing environments for learning, innovation, and productivity in developing countries, is the major reason why their economies lag behind those of developed countries (Teece, 1996). For this reason, the external economies that are brought about by the existence of domestic clusters are part of the significant influencers of learning and they are ultimately behind most scarce capital and capabilities of firms, and from the firm's perspective, a genuine global competitive issue (Porter, 1998).

2.2.8.5 The government- policy and strategy

This determinant puts in place enabling guidelines and procedures that govern the activities of the industries and has the responsibility to improve citizens' welfare and attain both economic stability and political stability of the country Porter (1998). Government's influence on these four general determinants can be either positive or negative. As Porter (1990) revealed, government can affect conditions by introducing policies that speak to education, capital market regulations and subsidiary. It could also control domestic conditions by introducing product standards or regulations that favour customer needs. Barragan (2005) noted that a government which cushions local companies from competing with foreign companies, which counters the rise in quality or productivity and in cases where the free market is available; the local industries do not survive the competition. In a study that

was conducted by Dlamini (2012), government can create an enabling environment by providing and ensuring incentives.

The promotion of partnerships between foreign and local firms by the government will enhance the transfer of skills and technology. It is supported by studies that economies that are controlled by the market tend to be more innovative and productive when compared to government parastatals. Supporting industries, company structure and strategy can be affected by tax policies, competition regulations and other regulatory statutes for example the economic reform (Blumental, 1999). In a study on the competitiveness of China's motor industry, Wu (2006) also employed Porter's Diamond model and noted that controlling foreign firms entering China, government provides substantial advantage to selected business groups.

2.2.8.6 Chance factors

It is a determinant factor either affecting or benefiting an industry or government. Barragan (2005) defined chance factors as the likelihood of external influencers such as natural disasters or war that could benefit or affect the industry or the country. These events are largely out of control of governments or authorities among industries. Chance factors are not limited to invention, wars, economic crisis, basic technologies, and major change in foreign demand. Porter (1998) indicated that they generate discontinuities that could reshape or unfreeze industrial structures and thus play a key role in shifting the competitive advantage in many companies. Porter (1990) suggested that companies should promote constant development and novelty, and endeavour to grab opportunities emanating from chance events. Fluctuating exchange rates can also be viewed as a chance factor, impacting on trade and at industry and firm levels (Van Rooyen & Boonzaaier, 2017).

Porter (1990) puts forward the argument that the primary factor for international competitiveness was productivity and that an increase in that factor can in turn improve the standard of living of the citizenry. Productivity depends on a combination of several factors which include up skilling the workers, developing innovative technologies, cost reduction and producing quality products. At the local level, increased production can be seen when the country's industries 'promote' themselves to improve efficiencies. For example, an improvement in technology can increase productivity and concurrently facilitate the production of different products which are more valuable for customers. Competitiveness in several industries by one country is often not achieved, for this reason; countries are better off focusing on those industries in which they have a highly competitive advantage Porter (1990).

2.2.9 Extension of the Porter's Diamond model

Porter's model was criticised by Rugman (1991) as it could not be effectively applied to smaller nations trading with bigger nations. For example, Rugman and D' Cruz (1993) demonstrated that Canada's international competitiveness is not fully explained by the Porter home country diamond. The double diamond model (DDM) was therefore suggested by Moon et al. (1995) to address this shortcoming. The DDM incorporates the multinational activities and consider government as an important endogenous variable. This model determines the similarities and differences in industry structure and explain the different approaches undertaken. This framework is more effective for global comparison where different size economies are competing.

Porter's model was also extended by Webber and Lambaste, (2011) to accommodate agri-value chain analysis and by the Ismea Report (1999), who considered the agricultural economic implications of adding different Eastern European countries to the EU. The World Economic Forum further expanded the Porter's Diamond model in its World Competitiveness Report where countries' competitiveness is ranked against a range of indicators and economic factors.

Porter's model was also applied in the business environment within the South African context to analyse the agribusiness value chain (Van Rooyen, 1998; Esterhuizen & Van Rooyen, 2006; Esterhuizen & Botha, 2011; Jafta, 2014; Boonzaaier, 2015; Angala, 2015, Abei, 2017, Dlikilili, 2018; Sibulali, 2018), where local aspects were integrated in to the Porter competitive Diamond model and socio-economic determinant, to consider economic and social transformation, was added in the recent studies by Barr (2019) and Mtshiselwa (2020).

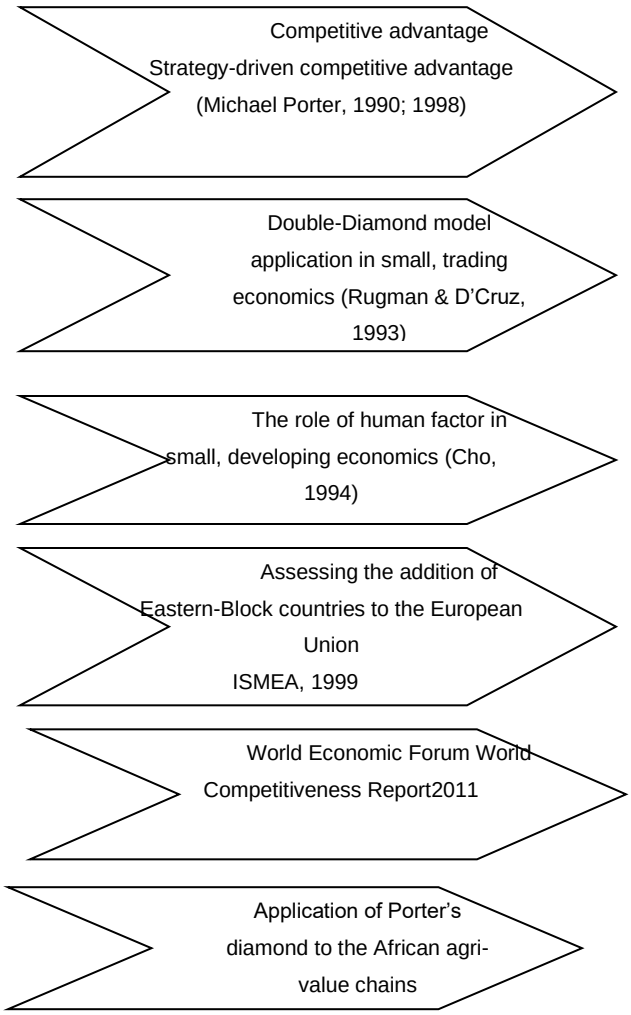

Figure 2.3: Influence of Porter's diamond on competitiveness research.

Data source: Rugman and D'Cruz (1993), Cho (1994), Ismea (1999), Webber and Labaste (2011),Barr (2019), Mtshiselwa (2020)

2.3 Defining competitiveness

Competitiveness as a concept has been addressed from various perspectives (Kennedy et al., 1997). As noted by Cho (1998), there has not yet been a clear definition developed despite all the discussions on the subject. Competitiveness is a relative measure and there is no agreed definition on how to measure it precisely (OECD, 2010).

From these views it is expected that numerous definitions of the concept have been brought forth and these were dependent on the level of that analysis which may focus on the unit being observed, which may include; the country, an industry, a sector or firm, or the commodity being studied. In a definition quoted by Esterhuizen (2006), competitiveness is defined as a tool to explore markets, both local and

international, for virtual gains from trade when compared to other rivals. It has been noted that a product is considered competitive when it undertakes its activities profitably in the long term and keep or extend both local and foreign market share (Modos, 2001). From this, competitiveness is the capacity to trade goods and services that would meet market demand requirements in terms of quality, price, and quantity to ensure sustained profits for the industry to survive and continue to be successful. According to the Global Competitiveness Report (2014 - 2015), competitiveness denotes 'factors influencing the level of productivity of a country'. This supports Porters view on the key role of productivity.

Freebairn (1986), attempting to draw in choice and opportunity, define the concept as the ability of an industry to draw investment and other scarce resources by selling products in the international market, whilst determined to earn opportunity cost of resources. This approach is widely used in agricultural economic literature due to its application of the opportunity cost principle (Esterhuizen 2006; Angala, 2015; Boonzaaier, 2015; Abei, 2017; Van Rooyen & Boonzaaier, 2017; Dlikilili, 2018; Barr, 2019).

For the industry sector, competitiveness is best described as being able to compete in markets for services and commodities while sustaining its position in the world market whereby price and quality are considered. As argued by Black et al. (2009), suppliers become competitive when their prices match those of their competitors.

Other definitions that can be drawn from is by OECD (1992), defining competitiveness as the level at which a nation may produce products that should thrive in global competition and at the same time develop its profits at national level, in the environment of market liberalisation. On another note, OECD (1997) defined the concept of competitiveness as the capacity to withstand competition and to be successful. On the same note, competitiveness is described as the capability to trade products that will meet standards as demanded by the market while ensuring profits over time that enables the industry to continue growing. Frohberg and Hartmann (1997), in their view, explain competitiveness as the capacity to supply products at the right time, place and in the state required by customers, at better prices than those of other suppliers, while earning at least the opportunity cost of returns on resources used. In a description by Neslihan (2012), competitiveness is the industry's ability to be able to perform better, despite challenges posed by rivals.

The sugar industry is a globally traded based commodity which is driven by quantities produced (economy of scale) and low unit costs by turning inputs to outputs in a profitable manner. As indicated by Esterhuizen, Van Rooyen and D'Haese (2008) competitiveness was viewed as 'the capacity of an industry, sector or firm to enter international competition (imports and exports) by selling their products within the global market while earning at least the opportunity cost of returns on resources used'.

Therefore, in this study, competitiveness is viewed in line with the proposed definition by Freebairn (1986), and as used by Jafta (2014), Angala (2015), Boonzaaier (2015), Abei (2018), Dlikilili (2018), Sibulali (2019) and Barr (2019), in the analysis of globally traded agricultural products. This definition provides a basis for the measurement methods and analyses of the competitiveness of the sugar industry.

2.4 Measuring competitiveness

It has been argued that a single measurement of competitiveness does not reflect the state of competitiveness (Jafta, 2014), hence this study will use selected methodologies.

Competitiveness is about creating and exploiting an enabling environment that will allow business to outperform its competitors as highlighted by Esterhuizen (2006), and competitiveness can be assessed at different dimensions which are macro or micro economic level, based on the desired outcomes to be achieved. At the micro level, it is usually acknowledged that exporting companies are more efficient in producing goods and services compared to companies producing for local markets (Bernard & Jensen, 1999). The neoclassical economics and the strategic management school view different approaches on the measuring of competitiveness as suggested by Sagheer et al. (2009). Competitiveness can also be classified into static and dynamic. Static is based on competitive level assessed at any given time while dynamic is based on competitive changes assessed over time. In their overview, it showed that competitiveness is measured using different concepts at varying levels, depending on whether it is a firm/industry or business.

Measurement could reveal performance, using indicators that include trade and market performance which could also be revealed by comparative advantage indicators, etc. (Latruffe, 2010). These include the real exchange rate (RER), the export market shares (EMS) (Latruffe, 2010), the net export index (NEI) (Banterle & Carraresi, 2007), revealed comparative advantage (RCA) (Balassa, 1965) and RTA (Vollrath, 1991). Since competitiveness is a relative concept, it is suggested that it is measured through benchmarking. This could be comparing countries or firms against each other which are trading domestically or internationally.

The other discipline which is the strategic management measure emphasises on the company's strategy and structure. According to Porter (1990), it includes the social cost-benefit ratio (SCB), the domestic resource costs ratio (DRC), the cost of production method and Porter's theory of competitiveness, which is the Diamond model. The different methods of measurements are discussed below and for this study, analysis was based on the Competitive Diamond conceptual framework established by Porter (1990), and the RTA method which is mostly used in measuring the competitiveness of agricultural companies.

2.4.1 Revealed Comparative Advantage (RCA)

As suggested by Lin, Cai and Li (1996), the comparative advantage approach is the best with regard to maximising the benefits of trade, regardless of the source of comparative advantage, hence for the purposes of exploring the comparative advantage of various indices, RCA was included. It was proposed by Balassa (1965), in his definition, a country has an RCA if its export share of a certain commodity is equivalent or greater than the share of the total global trade the product represents. It is an index applied in global trade to calculate both relative advantage and disadvantage of goods or services as shown in a trade flow for a particular country and based on the Ricardian comparative advantage theory emphasising export ability. It is known as the Balassa index. The author noted that it might not be of importance to include all the elements that would make a country have a comparative advantage; hence he proposed that comparative advantage is expressed in terms of trade forms. A comparative advantage is 'revealed' if RCA is more than 1; however, if RCA is less than 1, the country is said to have no export comparative advantage in the commodity or industry. Such a product can therefore, not be traded on a sustainable basis as it cannot earn sufficiently to compensate scarce production factors required in the production and trading processes. RCA also uses market prices as an indication of value, not economic shadow pricing or domestic resource cost pricing i.e., use prices as they are reflected in the market over time.

To be precise, the revealed comparative advantage index of a product (j) exported from country (i) (RCA_{ji}) can be expressed as follows:

$RCA_{ji} = (X_{ji}/X_{jw})/(X_i/X_w)$

Where:

X_{ji} denotes export value of product (j) from country (i)

X_{jw} denotes world export value of the product (j)

X_i denotes export value of country (i)

X_w denotes world export value

2.4.2 Relative Trade Advantage (RTA)

The RTA originated from the RCA by Balassa (1965), which was further expanded by Vollrath (1991) who suggested that the RTA may be preferable to other techniques such as RCA and NEI, because it includes all forms of trade i.e., competing in export- and import markets. Therefore, the RTA takes a more comprehensive view and argues that local demand will be served through local production competing against world imports. In view of this, the RTA index technique was employed to determine the competitive status of the Eswatini sugar industry. This approach will give more comprehensive

explanation of how the sugar sector is performing in the global market environment and a better alignment with the chosen definition of competitiveness.

The RTA index as defined by Scott and Vollrath is the difference between the RXA and RMA (Scott & Vollrath, 1992). A positive RTA means the exports of a product exceed the imports thus providing a competitive advantage therefore, negative values denote competitive disadvantages. This is the easiest way to compute these indicators based on available data on exports or imports (Frohberg & Hartmanm, 1997). It came as a refinement of the approach by Wijnand et al. (2008). An increase in the domestic supply of a commodity would be signified by a positive growth, implying that this sector is competitive when compared to other competing opportunities and relates to opportunity cost considerations (Van Rooyen & Boonzaaier, 2017).

The RTA index can be expressed as follows:

(1) $\boldsymbol{RTAij} = \boldsymbol{RXAij} - \boldsymbol{RMPij}$

(2) $\boldsymbol{RXAij} = (\boldsymbol{Xij\Sigma 1}, \neq \boldsymbol{jXi1})\ (\neq \boldsymbol{iXkj\Sigma k}, \boldsymbol{k} \neq \boldsymbol{i\Sigma 1}, \boldsymbol{1} \neq \boldsymbol{jXk1})$

(3) $\boldsymbol{RMAij} = (\boldsymbol{Mij\Sigma 1}, \neq \boldsymbol{jMi1})\ (\boldsymbol{\Sigma k}, \boldsymbol{k} \neq \boldsymbol{iMkj\Sigma k}, \boldsymbol{k} = \boldsymbol{i\Sigma 1}, \boldsymbol{1} \neq \boldsymbol{jMk1})$

Where:

X signifies export values

M signifies import values

Subscripts *i* and *k* denote the product categories

j and *1* denote the country categories

2.5 Value chain defined

Value chain is defined as the full range of activities which are required to bring a product or service from its conception of production phase until delivered to the consumers and final disposal after use ((Kaplinsky & Morris, 2000). Their approach looks into how the activities are carried out along the chain as well as how the value is shared among the actors. The flow of information is important in achieving value chain competitiveness. According to Gereffi (1994), the actors of a value chain as well as the input-output, and the territorial structure along with technical structure also define a value chain. Analysis of the value chain seeks to understand how a business creates value for customers by examining the contribution of different activities in the business against the value. A value chain is about linkages generating value for the consumer. The productivity, efficiency and depth of agricultural value chains are important elements driving commercial agriculture and business. Most importantly, it can be used to assess how relationships amongst players are governed, enabling a deeper analysis to be done on the highly abstract notion of economic globalisation (Gibbon, Bair & Ponte, 2008).

2.5.1 Importance of value chain analysis

Value chain analysis is a useful analytical tool that helps understand overall trends of industrial reorganization and identify change agents and leverage points for policy and technical interventions. The analysis involves identifying chain actors at each stage and discerning their functions and relationships; determining the chain governance, or leadership, to facilitate chain formation and strengthening; and identifying value adding activities in the chain and assigning costs and added value to each of those activities. The flow of goods, information and finance through the various stages of the chain are assessed in order to detect problems or identify opportunities to improve the contribution of specific actors and the overall performance of the chain (UNIDO, 2009). The value chain can help you answer questions regarding:

1) How the products you produce reach the final consumer.

2) The structure (economic relationships) between players in the chain.

3) How this structure is likely to change over time.

4) The key threats to the entire value chain.

5) The key determinants of your share of the profits created by your chain.

2.5.2 Value chain actor

The term value chain actor summarizes all individuals, enterprises and public agencies related to a value chain; in particular the enterprises performing the basic functions of a value chain, typical operators include farmers, small and medium enterprises, industrial companies, exporters, wholesalers and retailers and the providers of support services. Certain government agencies at the macro level can also be seen as value chain actors if they perform crucial functions in the business environment of the value chain in question (German Technical Cooperation, 2007).

Value chains include process actors such as input suppliers, producers, processors, traders and consumers. At one end are the producers – the farmers who grow the crops and raise the animals. At the other end are consumers who eat, drink and wear the final products. In the middle may be many individuals and firms, each performing one small step in the chain: transporting, processing, storing, selling, buying, packaging, checking, monitoring and making decisions. A value chain also includes a range of services needed including technical support (extension), business enabling and financial services, innovation and communication, and information brokering. The value chain actors and service providers interact in different ways starting from the local to national and international levels. The value chain includes direct actors who are commercially involved in the chain (producers, traders,

retailers, consumers) and indirect actors who provide services or support the functioning of value chain. These include financial or non-financial service providers such as bankers and credit agencies, business service providers, government, researchers and extension agents.

Smallholder farmers

Majority of small holder farmers as indicated by recent studies are excluded from significant growth opportunities offered by high value marketing chains (Chelang'a et al.2013). These farmers are being faced by many competitiveness bottlenecks and market failures along the chains such as low productivity, poor product quality. Lack of standard compliance, high transaction costs and lack of networks among others (Narrod et al.2009). Farmers are not able acquire the necessary funding (or if credit, costs are high) resulting in in not making profitable investment in agricultural inputs (Dorward, 2009). Also a prolonged drought can largely wipe out the entire investment and generate significant losses as most hybrid seeds and fertilizer require application on time and stable supply of water. There is therefore a need to address these constrains holistically through coordinated and sustainable way that promotes affective participation in the value chains.

Marketing

Agrobased products already play a significant role in generating export revenues for some member countries. The ability to meet international food quality and safety standards is of common concern and most countries are handicapped by a lack of information about international markets. Harmonization of standards is critical between regional institutions and bodies. Another challenge is low efficiency market. The farmer may be efficient in producing the goods technically, however, the benefits may be lost if he marketing channels are poor. Also barriers in entering the market contribute in obtaining a competitive market. The government should create a right environment by setting rules and drafting regulations on competition (Berkum, 2004).

2.6 Agri-competitive analysis references to recent and important studies

Several research studies have been undertaken on the competitiveness of different agricultural commodities. Table 2.1 highlights the authors of the different publications and the methods employed to measure the competitiveness. Much of these are recent studies by the Centre of Agribusiness, at Stellenbosch University. This briefly highlights the topics, with most studies focusing on RTA and Porter's Diamond for the framework and the conclusion reached.

Table 2.1: Previous studies on the competitiveness of agricultural commodities

Topic of research paper	Author(s)	Framework applied	Findings/conclusions

RSA food commodity chain.	Esterhuizen and Van Rooyen (1999).	RTA, Porter Diamond model.	Sixteen (16) selected food commodity chains. Majority of chains are marginally competitive, except for the maize, pineapple and apple chains. Index decreases when moving from primary to processed products.
Analyse the competitiveness of the European Union food chain in a global environment.	Ismea (1999).	RTA and Porter Diamond model.	Scope for European Union integration.
RSA apple industry.	Du Toit (2000).	Comparative analysis, Porter Diamond model.	RSA less competitive than Chile.
Analysing RSA flower industry competitiveness.	Van Rooyen et al. (2001).	RCA, DRC and private cost ratio (PCR Porter Diamond model).	RSA has a competitive advantage over Australia; however, through Porter analysis, determinants are stronger, i.e., government support.
Hungarian agricultural food sectors.	Fertő and Hubbard (2002).	RCA and RTA.	Hungary has a comparative advantage for 11 of the 22 aggregated commodities.
Comparative advantage of organic wheat production in the Western Cape	Mahlanza et al. (2003)	Social cost benefit (SCB) DRC Policy analysis matrix (PAM)	The results reveal a comparative advantage for wheat grown under organic practices with distortions that is existing in the market though

			wheat is grown under organic practices
Competitive performance of global deciduous fruit supply chains: South Africa versus Chile.	Mashabela and Vink (2008).	RTA.	The study indicates that SA's deciduous fruit supply chains are globally competitive. Chile's supply chains for deciduous fruit are highly competitive internationally.
RSA wine industry.	Esterhuizen and Van Rooyen (2006).	RTA, GCR (WEF).	Industry enjoys a sustained improvement in competitiveness.
RSA deciduous fruit canning industry.	Madima (2009).	RTA, Porter Diamond model.	Industry is internationally competitive in the following areas: labour costs, product quality, efficient production technology and regulatory standards.
Analysing competitive performance of the Namibian date industry.	Angala (2015).	RTA, Porter Diamond.	Namibian date industry is competitive in the international market.
Ghana cocoa exports.	Boansi (2013)	RCA and RSCA.	Ghana enjoys competitive advantage, but competitiveness is higher in cocoa beans than processed cocoa.
Analysing the competitive performance of the South African apple industry.	Jafta (2014).	RTA and Porter Diamond framework.	RSA apple industry is marginally competitive.
South African stone fruit industry value	Boonzaaier (2015).	RTA, WEF and Porter Diamond framework.	RSA stone fruit industry is competitive in the global

chain.			trade mostly in the period of deregulation in the mid 1990's. Plums were the most competitive stone fruit type, followed by apricots, peaches, nectarines and cherries.
Analysing the competitiveness of the agribusiness sector in Eswatini.	Dlamini (2012).	Porter Diamond.	The competitive environment in which the sector operates is unfavourable and does not enhance competitiveness.
Competitiveness of the RSA agribusiness sector.	Van Rooyen and Esterhuizen, (2012).	RTA.	The sector is marginally competitive; however, since 2004 it showed an increasing negative trend.
Relative competitiveness of the South African oilseed industry.	Hallat (2005).	RCA, RTA, Net Export Index.	SA primary industry is more competitive compared to that of Argentina. In the secondary industry, Argentina enjoys competitive advantage over South Africa.
Analysing competitive performance of the Cameroonian cocoa industry.	Abei (2017).	RTA, Porter Diamond model.	The Cameroon cocoa industry performed positively; however, it can increase competitiveness through applying selected industry-based strategies.
Agri-value chain competitiveness analysis report	Van Rooyen and Boonzaaier (2017)	RTA Porter diamond model	SA deciduous fruit industry and wine industries are competitive.

Analysis of Tobacco sub-sector in the Republic of Macedonia.	Tuna, Georgiev and Nacka (2013).	RCA and Porter Diamond model	The Republic of Macedonia has a competitive advantage for producing tobacco.
Measuring the competitive performance of the South African citrus industry.	Dlikilili (2018).	RTA, Porter Diamond, two-step Delphi.	SA citrus industry has maintained positive figures since the early 1960s and is still competitive.
Analysing the competitive performance of the South African subtropical fruit industry.	Sibulali (2018).	RTA, Porter Diamond, two-step Delphi.	The SA subtropical fruit industry has a marginally competitive performance.
Factors impacting the competitive performance of the South African wine industry value chain.	Barr (2019).	RTA, extended Porter Diamond, two-step Delphi.	The SA wine industry is competitive with its global competitors; however, it has followed a declining trend since 2009.
Competitive performance of smallholder wool growers.	Nkamisa (2020).	RCA and RTA Porter Diamond, two-step Delphi.	South African small holder wool value chain continued to compete competitively, even when compared to its major competitors.
Competitiveness of the South African table grape industry.	Mtshiselwa (2020).	RCA and RTA Extended Porter Diamond, two-step Delphi.	South African table grape industry is competitive.

Source: Adapted from Dlikilili (2018), Barr (2019), Mtshiselwa (2020)

2.7 Conclusion

The purpose of this section was to review the relevant literature regarding competitiveness through outlining the evolution of competitiveness from classical to neo classical theories with the purpose of their relevance as it applies to the Eswatini sugar industry. The new trade theories of Porter's model and the extended model were discussed. The new competitiveness theories are different from the neoclassic theory. It has been argued by the different scholars that a country's prosperity is created by strategic choices made by a nation (Mtshiselwa, 2020). It has also been explained from the theories on why some nations are more competitive than others when exporting commodities. To direct this study, 'competitiveness is viewed as the key for industries to sustainably compete and trade its products in the international market while earning at least the opportunity cost of returns on resources used'. Therefore, understanding the factors that influence the competitiveness of the Eswatini sugar industry will assist policy and decision makers to apply strategies that will contribute towards improving the competitiveness over its rivals.

Some of the methodologies used to measure competitive performance have been reviewed and their limitations outlined. Among the methods that were outlined was the RTA and the Porter Diamond framework that were employed in this study. The RTA incorporates both the export and import trade values. Databases from FAOSTAT and ITC were used. Other studies on analysing the competitive performance of various agricultural industries were also considered.

The conceptual framework that forms the bases of this research analysis will be discussed in depth in the next chapters.

CHAPTER 3: RESEARCH METHODOLOGY AND ANALYTICAL FRAMEWORK

3.1 Introduction

This chapter discusses the analytical framework and the methodologies applied for the competitive analysis of the Eswatini sugar industry. The research questions and hypotheses in the first chapter and the theoretical construct and definitions from the literature survey in Chapter 2, guided this framework.

3.2 Research design

The study design is based on a mixed approach with empirical measurements and opinion assessments through the application of the Vollrath-Porter approach as developed and applied by Ismea (1999), Esterhuizen (2006), Van Rooyen and Esterhuizen (2012) and more recently by Boonzaaier and Van Rooyen (2017), Barr (2019) and Mtshiselwa (2020).

Competitive performance is empirically measured through RCA and RTA methods and, as argued by Porter (1998) the point of call in the study of industry's competitive advantage is the identification and analysis of factors influencing the competitiveness of industries through expert opinion surveys. For this a descriptive research approach, using Porter's (1998) Competitiveness Diamond model was employed.

3.3 Framework of Analyses (foa)

The analytical framework developed by Van Rooyen and Esterhuizen (2012) and adapted by Jafta, (2014), Angala (2015), Boonzaaier (2015), Abei (2016), Dilikillili (2017), Sibulali (2018) and Barr (2019) for agricultural commodity analysis of long-term crops, was followed. Certain adaptations were made to accommodate the Eswatini sugar industry specifically. The steps are sequentially presented as: defining/contextualising competitiveness; measuring performance; identification of enhancing and constraining factors; analysis; recommendations; and conclusions, see Figure 3.1.

FIVE STEP ANALYTICAL FRAMEWORK:

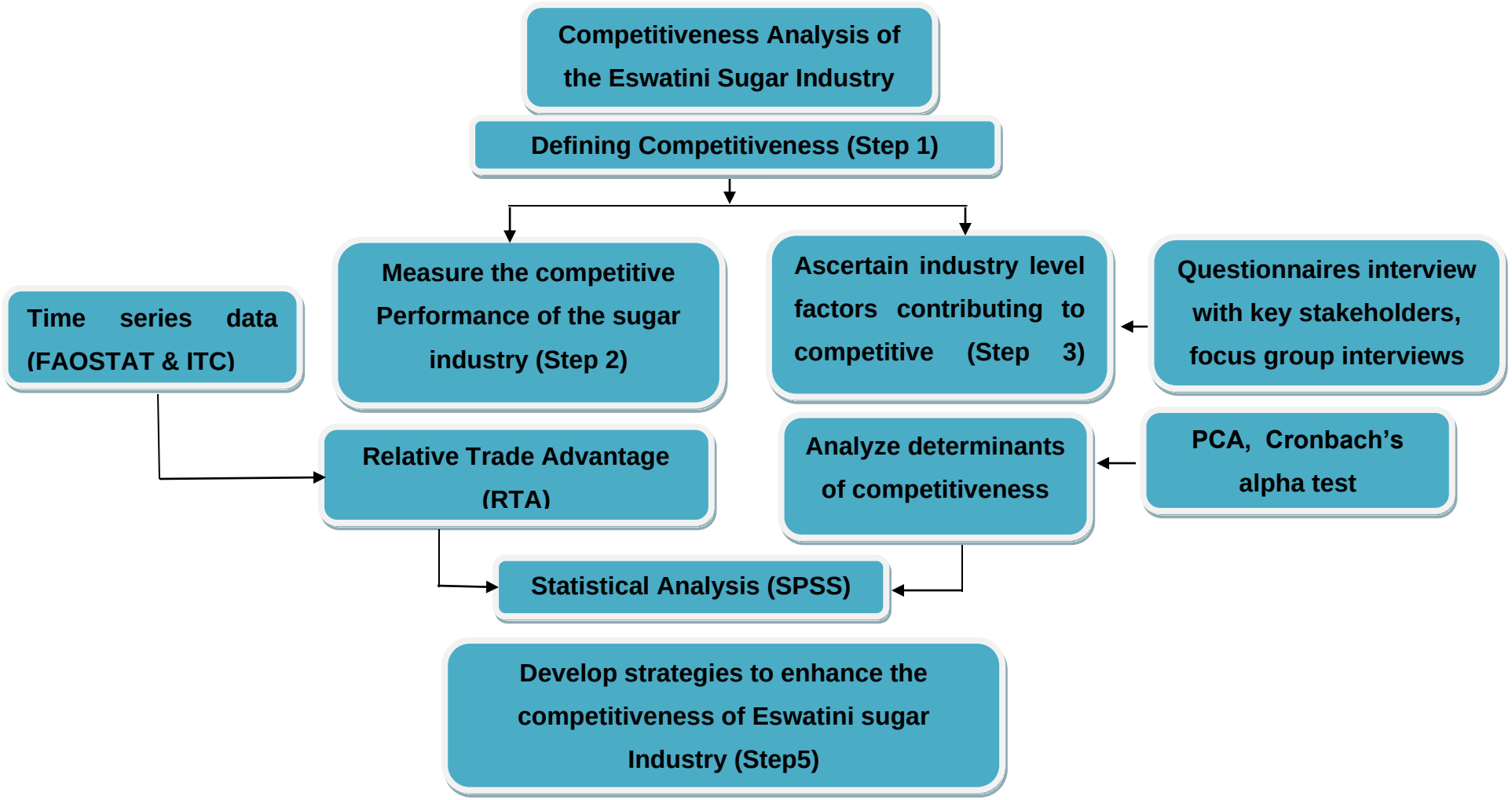

Figure 3.1: A framework to measure and analyse the competitiveness of the sugar industry in Eswatini.

Source: Adapted from Van Rooyen et al. (2011), Jafta (2014), Boonzaaier (2014), Angala (2015)

3.3.1 Step 1: Definition of competitiveness in the Eswatini sugar industry

Competitiveness, applicable to this study, was discussed and defined in Chapter 2 viz, 'industries are able to be competitive by trading products both in domestic and international markets and achieve sustainable business growth whilst striving to earn at least the opportunity cost of resources'.

3.3.2 Step 2: Empirical measurement of the sugar industry's competitive performance

For this study, secondary data used the RTA to measure how the industry competes in the global markets. This method by Vollrath (1991), which is an improved version of revealed comparative advantage (RCA), considers both the import and export values. The RTA provides a better indication of 'competitive performance' than the RCA index, hence the use thereof in this study (Boonzaaier & van Rooyen, 2017; Dlikilili, 2018). The RTA also help to determine how the industry has been trading overtime i.e., trends in competitive performance, both domestically and internationally, and was calculated based on the formula discussed in Chapter 2.

3.3.2.1 Data used

As discussed in the previous section (Chapter 2), for calculating the RTA, the study used data from the international trade database (ITC) and FAOSTAT available on the internet at www.fao.org and www.trademap.com, respectively. Secondary data was extracted from FAOSTAT database (FAO, 2019) from 2001 to 2019 and ITC data (ITC, 2019) from the period 2001 to 2019 to get the RTA values for the Eswatini sugar industry. The FAO database provides only agriculturally based commodities data from 245 countries; the ITC database provides data from 220 countries from across all economic sectors. Worth noting the sugar can be compared against other marketed agricultural goods in FAO database whereas for the ITC data, sugar was compared against a wide spectrum of products. The ITC data base therefore, describes the opportunity cost principle as noted in the definition of competitiveness above more accurately. Both data sets will; however, be used in the study to determine whether differences are notable and relevant. Values are based on recorded market prices and therefore fit in to the RTA measurements.

3.3.3. Step 3: Ascertain factors contributing to competitive performance

Factors enhancing or constraining the competitive performance of the sugar industry of Eswatini were ascertained through qualitative methods by surveying key players along the sugar industry value chain on factors impacting on competitiveness. This accounts for the primary data set to be used.

3.3.3.1 Sampling method

Purposive sampling, which is an expert sampling method, was employed in this study to gather data, considering that the industry is so small. Purposive sampling is a method commonly used in qualitative research to identify and select information-rich cases for the effective use of limited resources (Patton, 2002). This technique does not require a set number of informants and in this case, the researcher decides what needs to be known. It sets out to identify participants who are relevant and willing to provide the information by virtue of knowledge or experience (Bernard 2002, Lewis & Sheppard 2006). This technique maximises the efficiency and validity of information. This method was preferred because it does not consume a lot of time and is less expensive. In addition, a specific target group was selected based on their knowledge and relevancy on the subject. The limitation of this method is that the researcher may be bias due to generalised assumptions when participants are selected. It is therefore critical to have experience and skills when undertaking the exercise to ensure that data is valid and meaningful (Godambe, 1982). Similar methods were used in most recent agri-competitiveness studies (listed in Table 2.1) and by the IMD and WEF competitiveness ratings, discussed in Chapter 2.

3.3.3.2 Data collection

The sugar executive survey (SES) was conducted using questionnaires to executives and experts in the industry to collect data on the factors that affect competitiveness. A questionnaire was distributed to key representatives which included: (1) producers, millers, input providers and service providers; (2) focus group discussions were also conducted with growers (farmers associations) who are growing sugar cane to get their views on the industry; and (3) other key representatives and leaders participated by means of interviews in the process. Through this process the executives, industry leaders and experts responsible for strategic and the day to day operation and strategic management of the sugar industry were mobilised to provide their opinions. Table 3.1 lists the experts that participated in the survey.

List of farmers associations interviewed:

- Vuvulane farmers association
- Mganyaneni
- Sukumani Ngonini
- Sibhotela
- Imbali YaMadlenya
- Lomdashi
- St Philips
- Phuzamoya
- Mpondweni

- Setamimphilo Ngonini
- Tikhumbule
- Tikhwepha
- Kuselangeni
- Ligidzamuva
- Sesibonile 1
- Sihawu SaMgwagwa
- Bomakhelwane
- Inchubekela Phambili
- Ngcamphalala Khulani
- Kuhle Kutentela

Table 3.1: Information on participants for the study

Respondents to participate	Number of respondents	Position	Institution
Large sugar producers	4	Producer, processor, packer	Royal Eswatini Sugar Coperation (Mhlume and Simunye) Illovo
Medium sugar producers	10	Producer	Tambankulu Estate Vuvulane
Small holder producers	20	Producer	Farmer's associations
Millers	3	Processor, packer	Royal Eswatini Sugar Coperation (Mhlume and Simunye) Illovo
Marketer	1	Exporter	Eswatini Sugar Association
Input providers	4		Khuba traders Farm chemicals Eswatini agricultural suppliers Crane feeds
Service providers	3		Government, FinCorp

Data source: SES (2019)

A structured close ended questionnaire that was constructed, guided by Porter's Competitiveness Diamond framework, was self-administered to key stakeholders and executives in the sugar industry – the Sugar Competitive Survey (SCS). Refer annexures A and B.

A total of 36 questionnaires allowed the rating of the factors impacting on competitiveness based on a scale of 1 to 5, where 1 indicated the most constraining/negative impact and 5 a strong or most enhancing impact on competitiveness. The rating is referred to as a Likert-type scale (see Table 3.2) by Likert, (1932).

The respondents were to provide their views on the extent to which factors contributed to the competitiveness of the Eswatini sugar industry. The participants were required to mark a box based on their opinion.

Table 3.2: Likert scale

Scale	Meaning
1.	Agree wholeheartedly that the factor constrains competitiveness
2.	Somewhat agree that the factor constrains competitiveness
3.	Indifferent between the two answers
4.	Somewhat that the factor enhances competitiveness
5.	Strongly agreed that the factor enhances competitiveness

A full spectrum of views was thus gathered, based on inherent experiences and intelligence on the industry, by those managing the industry.

It is worth noting that the study used and analysed twenty-eight questionnaires that were returned out of the thirty-six; eight questionnaires were spoiled. This indicates that 22% of the total population was not used in the analysis. This was since some questionnaires had incomplete responses. Therefore, the 77% response rate is considered sufficient to provide a good view of the industry (Fincham, 2008).

The focus group, which consisted of twelve experts, participated in two sessions to gather their opinions on the RTA trends and the findings in the SES i.e., on the factors influencing the competitive performance of the sugar industry. The first session involved identifying the respondents willing to participate in the survey by determining and rating factors contributing to the competitiveness and possible strategies which could be employed in the future to improve the industry's competitive performance. In the second session, items were summarised based on the information obtained from the first session. Respondents were requested to rate the responses, as discussions were on-going to reach consensus, the researcher was also able to observe the dynamics among the respondents. The

discussions supported the analytical processes in steps 3, 4 and 5. Steps 1 and 2 was based on theory and secondary data; from steps 3 onwards primary data was collected and needed expert opinion to interpret.

3.3.3.3 Validity

The process of testing the questionnaire for any factors that could inhibit the instrument ability to collect data in an organised and economic way is referred to as pre-testing. As suggested by Ruane (2005), pre-testing should be conducted after the development of the questionnaire. A pre-test should be carried out before the actual data collection commences (Saunders et al., 2007).

A questionnaire should first be given to a small group of the population (Ruane, 2005). For this study, questionnaires were pretested for the content, length and clarity to a few selected industry experts by hand delivery to provide their views on the factors influencing the competitiveness of the sugar industry. The comments from the pre-test were then considered and where appropriately incorporated in the SES questionnaire, as suggested.

3.3.4 Step 4: Analysing the determinant factors of competitiveness of the industry

For analysing and identifying the determinant factors of competitiveness in this step, Porter's new competitiveness theory (1990; 1998) was used. In this step, the large number of factors from the SES were grouped/clustered in the major Competitive Diamond model determinants, to ascertain factors that would either enhance or constrain the industry's competitiveness. The information that was gathered from the interviews with different stakeholders were clustered and interpreted as categorised by Porter viz; factor conditions, demand conditions, related and supporting industries, firm strategy, structure and rivalry, the role of government and the role of chance, all as a base for strategy proposals to improve the competitiveness of the industry.

3.3.4.1 Statistical analysis methods

Sugar Executive Survey (SES) data; to analyse the responses from the Sugar Competitive Survey (SCS), and the Statistical Package of Social Science (SPSS) for empirical measurements were used. As the questionnaires were given as a hard copy, the first step in analysis involved data entry which entailed manually capturing data into spreadsheets, followed by analysis using SPSS, version 26.0. Categorical variables were analysed using frequency distribution and mean rating score values were employed to obtain the overall descriptive results.

3.3.4.2 Cronbach alpha

This test was developed in 1951 by Lee Cronbach to compute the internal consistency of a scale or test. This measures the design of the questionnaire to the level where its use in survey with multiple-item measurements is considered reliable (Schmitt, 1996). The test was developed for Likert scale research with the intention to assess attitudes and other hypotheses. Furthermore, Alpha is expressed as a value ranging between 0 and 1; however, there is no limit to the coefficient. When items subjected to a test are correlated, there is an increased value of alpha. When the Cronbach's Alpha coefficient is close to 1.0, it indicates greater internal consistency of the items measured and 0 indicates no consistency (Tavakol & Dennick, 2011). Even though the coefficient alpha can be high, it does not denote a high level of internal consistency.

In this research, the questionnaire used was formulated using the Porter model which was clustered into six determinants whereby the Cronbach's alpha was used to compute the reliability of the factors that were grouped based on their PCA ratings.

3.3.4.3 Principal Component Analysis (PCA)

This is one of the traditional and widely used analysis techniques, used in the analysis of relationships among several variables. It is intended for the reduction of the number of variables and to cluster them into more manageable groups (Zakaria, 2014). The clusters or groups are also known as factors (not to be confused with the SES factors). Each factor contains interrelated variables; hence a key dimension can be selected from each factor. Most studies mention that larger samples are better compared to smaller samples. Larger samples tend to reduce the probability errors and give more accurate solutions. Smaller samples present problems that could fail to produce a solution due to sampling error, (Osborne, Jason & Costello, 2004). The Principal Component Analysis was applied on the SES responses for the comparison of the reliability for each factor in the questionnaire (Boonzaaier, 2015). This was done to reduce the data that was obtained from SES, identifying the highly correlated variables which were rated similar by the experts and were given consistent ratings. Un-correlated factors had a high degree of inconsistency between respondents' ratings (Angala, 2015; Boonzaaier, 2015; Xolela, 2018; Barr 2019). For reliable analysis, the sample size was not sufficient, therefore the PCA results may not be highly valid, and hence it needs to be considered with care.

3.3.5 Step 5: Recommend strategies for improving the industry's level of competitiveness.

The steps mentioned above brought an insight on issues pertaining competitiveness and provided a broad understanding on the competitiveness of the Eswatini sugar industry. The information obtained

from the previous four steps' findings gathered during the focus group discussions were then used to suggest possible approaches that can be employed for enhancing the competitive performance of the Eswatini sugar industry. Over and above, recommendations were identified and proposed together with the respondents from the focus group discussions to be employed by the industry for future use. All these findings will be dealt with in Chapter 6.

3.4 Conclusion

The chapter described the methodology and analytical framework and data obtained for this research. Steps outlined in Figure 3.1, above, were followed for comprehensive measurement and analysis competitive performance. This analytical framework is derived from recent studies on this topic in a range of agricultural industries in the South and sub-Sahara Africa region (Abei, 2017; Dlikilili, 2017; Sibulali, 2018; Barr, 2019). Competitiveness was defined in Step 1 and to measure the competitive performance, the RTA index of Vollrath (1991) and trade data values were used. To identify and analyse factors of the sugar industry competitiveness performance, the Porter's Competitive Diamond model framework was used, together with focus group discussions with the experts. For statistical analysis, the Principal Component Analysis and the Cronbach's alpha were used to obtain the reliability of each of the factors from the questionnaire.

CHAPTER 4: AN OVERVIEW OF THE ESWATINI SUGAR INDUSTRY

4.1 Introduction

The chapter provides a descriptive overview of the competitive performance of Eswatini's economy and describes the sugar industry for the country. The chapter includes information on how the sugar sector was initially started in 1956 and how it has grown over the years. It further gives an overview on how the industry has been structured before and after deregulation with regard to marketing, advertising and promotion of the industry.

4.2 Eswatini competitive performance

Eswatini is amongst the competitive nations ranked 121 in the world out of 141 countries according to the GCI Report published by the (WEF, 2019) and reflect an increase in 2018 as it was ranked 120 out of 140 countries and scored 3.35 out of 100 on the 2018 global competitiveness report. Competitiveness Rank in Eswatini averaged 127.43 from 2011 to 2018, reaching 135 in 2013 with a low of record of 121 in 2019. The ranking is presented in Figure 4.1.

Figure 4.1: Eswatini competitiveness status.

Data Source: World Economic Forum (2019)

Although competitiveness can be measured with different approaches, there are mainly three known indices such as the GCI by World Economic Forum, the World Competitiveness Yearbook by Institution for Management Development and the Business Competitiveness prepared by International Finance Corporation. The competitiveness analysis has since 2005 been based on the GCI produced yearly by the World Economic Forum. It is a tool that was developed to quantify the microeconomic and macroeconomic aspects of the local competitiveness (Global Competitiveness Report, 2010). It evaluates the countries' ability to provide prosperity at its highest level to their citizens. It measures factors that determine productivity, as it has been found to be the main determinant of sustainable growth. This however, will depend on how efficiently a country uses its available resources, hence policies and set of institutions will also be assessed based on different levels of economic prosperity. This will help policy makers towards designing their countries strategies for economic growth after gaps and strengths are identified.

The Global Competitiveness Index assesses 141 countries according to twelve pillars for determining the production levels of a country. These pillars are financial market development, training, institutions, health and primary education, macroeconomic environment, infrastructure, higher education and goods market efficiency, technological readiness, innovation, business sophistication, labour market efficiency, and market size. The pillars are further structured into sub-indexes: efficiency enhancers, innovation, sophistication and basic requirements factors.

It is worth noting that as Eswatini was positioned 121[1h] out of the 141 countries, it saw a decline of four places from the 2017 rank where the country stood at position 116 out of 137. As the country presented mixed score results across all the twelve pillars of competitiveness, it falls behind by some distance from its Southern African peers; namely South Africa (67) and Namibia (100) to mention a few. Musa Dlamini from the Federation of Eswatini Employers and Chamber of Commerce mentioned the decline in rankings as a 'mammoth concern to the private sector as it states the reduced ability to be competent on the global environment and a setback to draw Foreign Direct Investment. There is thus a need for the country to formulate policies and stimulate industries and economic activities that will assist Eswatini to achieve a double digit in the GCI rankings in the next five-years' (Motau, 2018).

These policies should be based on the public-private collaboration and well-coordinated actions between the government and the private sector for economic progress sustainability. The country needs to formulate strategies that will finance innovation and technological adoption. Issues of labour market flexibility and worker's protection should be addressed by countries for competitiveness. Policies that will investigate issues of infrastructure should be considered as it impacts significantly on economic growth. Quality of higher education and training is essential for economic growth. For industries, staff training and skills development should be given priority as it contributes to productivity.

A sugar industry overview will be given in the rest of this chapter.

4.3 Global overview of the sugar industry

4.3.1 Production

The production of sugar crops is anticipated to increase globally compared to other competing crops given its favorable returns per hectare. It is expected that production of the crop will hike by 1.1% per annum compared to 2.1% per annum in the last decade, as a result of higher yields and area expansion (OECD-FAO Agricultural Outlook 2018 - 2027).

It is anticipated that China, Egypt, Eastern Europe, Ukraine and Turkey will expand its production. The production of sugar beet in the European Union reached its highest levels in 2017 as a result of the

abolition of production quotas; however, the production of sugar beet production in the global share is expected to decrease from 45% in 2017 to 40% in 2027.

Growth in the global sugar production is forecast to decline by 1.5% per annum compared to previous years which was 2.0% per annum (Figure 4.1). The increase in production is projected to occur mostly in the developing countries representing 77% of the world sugar production in 2027. The region's leading are Latin America, Asia and the Caribbean. Asia is expected to increase its global production share to 38% from 36% by 2027. However, with the other regions, that is the Caribbean and Latin America their global share in production is expected to drop from 35% to 33% in 2027. The decrease in these two regions is due to lower economic growth in Brazil, which is the biggest supplier. Brazil will dominate as the highest producer and exporter worldwide, but its production will remain constrained by local production of ethanol from sugar cane.

According to the outlook, sugar production in India is anticipated to increase at a steady level due to sugar policy reforms that have influenced steady prices paid to the farmers. Production is anticipated to increase by 7 MT over the coming years due to maintained domestic sugar demand reaching 31 MT by 2027. On another note, Thailand, due to abolition of price supports from 2018, productivity is anticipated to grow at a low rate. This country is expected to reach 13.5 MT, closely to China's production rate by 2027. China's production, which is both sugarcane and sugar-beet, is anticipated to increase at a fast rate in 2015 to 2020. Through increased yields and area, China's production is projected to reach 13.4 MT by 2027. Positive projections of production are expected in Pakistan as government continues to support farmers through guaranteed prices and subsidised exports. The strong domestic demand and opportunities for trade will drive the growth output for sugar in Africa. By the year 2027, the projections of the sugar output are expected to expand by 36% according to outlook. Investments at both farm and mill levels has led to expansion in production in Sub Saharan countries. This region will remain occupying a small portion of the global market of 7% in 2027 despite the growth in production. The projections of the sugar production will be lower in Africa compared to the developing world. Figure 4.2 show the global trend of sugar production and consumption since 2009 to 2018.

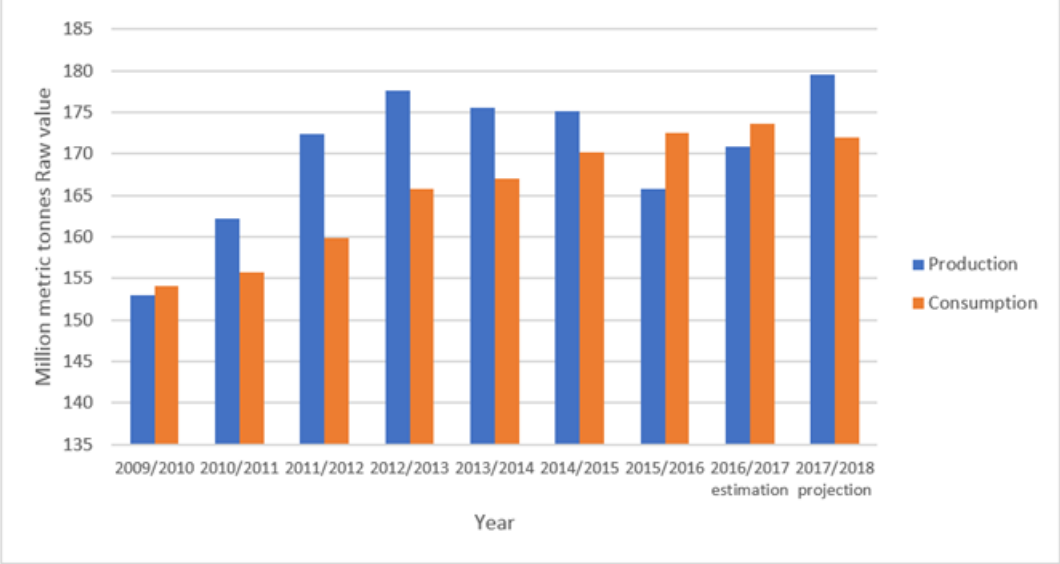

Figure 4.2: Global trend of sugar production and consumption.

Source: United States Department of Agriculture; Foreign Agricultural Service; May2017

4.3 Global sugar pricing and trading

Sugar exports and trade are forecast to remain concentrated with Brazil maintaining a leading position as an exporter highlighted in Figure 4.3. Its weakening currency over the US dollar will help to sustain its competitiveness; however, Thailand as the world's second largest export after Brazil will continue to challenge the country. The Asian competitor to Brazil will continue to improve its market share due to stable growth in production amounting to 16% of global exports by 2027 from the current 13%. For Australia, export sales will be boosted as the country invests in irrigation, the sugarcane area will be expanded, and the milling capacities will be increased over the period. In view of the outlook projections, the global sugar imports are more distributed than the exports. Growth in imports for Africa and Asia will be driven by the strongest growth in sugar demand.

The United States' policies continue to nurture domestic production and regulate the level of sugar imports since it is a region with sugar shortages. Projections of the unattractive sugar prices offer little incentives for the expansion of the sugar production. In view of this, sugar imports will continue which are established under the TRQ duty-free imports through WTO and FTAs agreements.

The sugar industry continues to be uncertain as trade changes continue to occur. The distortions occurring in the global sugar prices are not fully shifted to domestic sugar consumers and producers although global markets have experienced some changes and structural changes. A number of sugar producing countries are using a trade policy instrument as a way of protecting their domestic markets. The future demand for sugar is also uncertain considering the mounting data on the harmful effects of

extreme sugar intake on human health. Soon, sugar consumption is anticipated to decline due to health reasons. Health concerns which have been on the rise with regard to sugar consumption have resulted to increased government regulation reduced corporate procurement and consumer preferences for reduced sugar intake. These changes have implications on the sector market growth forecasts. According to OECD-FAO Agricultural Outlook (2016), the demand for global sugar would be 10% lower in 2025: sugar consumption would increase by 17 MT instead of the 38 MT projected in the baseline. These developments will affect the world sugar market. To address these challenges facing the sugar sector, coordinated efforts involving all value chain players and government will be required.

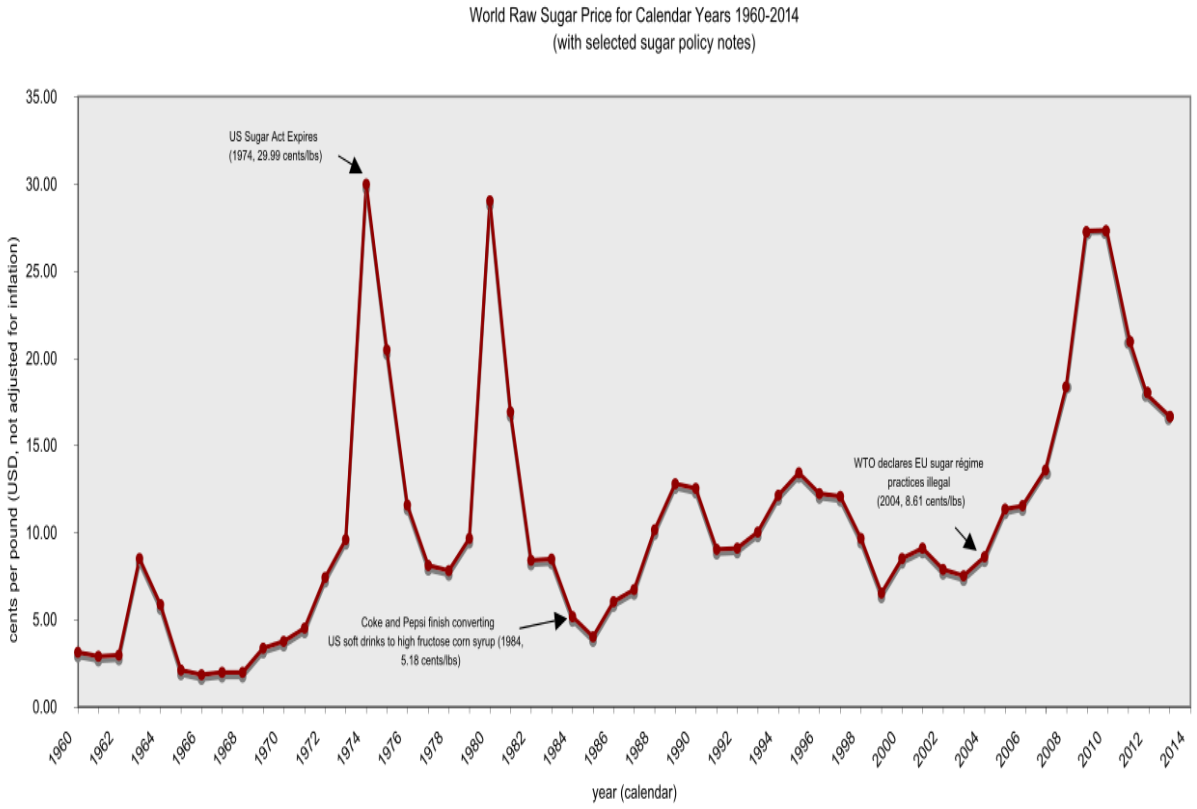

Figure 4.3 :Global sugar pricing and trading.

Source: Wikipedia.org

4.4 A short overview of the Eswatini sugar industry

The Eswatini sugar sector has experienced immerse growth since the 1950s. The first production began at the Big Bend mill with 5,600 tonnes per year. In 1960, the mill was upgraded and a second mill was constructed at Mhlume. This resulted to an increase in production to 100,000 tonnes in 1964 to 1965. A third mill was again constructed at Simunye in 1980, further increasing the production to 471,000 tonnes by the end of 1992/1993 which was almost 90 times the production of the 1950s (Eswatini Sugar Association Report,2011). It is clear that this sector has been the economic backbone

of the country. The sugar industry was initiated as a result of an irrigation project which was implemented in the Lowveld (Lubombo region). Currently, the sugar industry is the largest sector with a revenue of about four hundred million dollars per annum and contributes almost 12% of the national GDP (Central Bank of Swaziland Report, 2008/9:6).

Sugar cane in Eswatini is produced under irrigation in the Lowveld as shown in the areas highlighted with green in Figure 4.4. The production area under cane sugar has been growing over the years. Since 1969 area under production was 13,829 hectares, and in 1970 increased to 14,398 hectares. In 1990, it escalated to 36,503 and there was a slight drop in 2000 to 36,500 hectares. In 2005, it increased to 50,932 hectares and 52,937 hectares in 2010. Between 2012 and 2014, production was from 57,263 hectares to 58979 hectares (Production, Supply and Distribution of Agricultural Commodities by market year, 2020). In 2015 and 2016, the production increased from 59,586 to 59,924 hectares. In 2017 production increased from 61,075 hectares to 65,000 hectares in 2018 (Eswatini Sugar Association Report, 2011/ 2012; 2018).

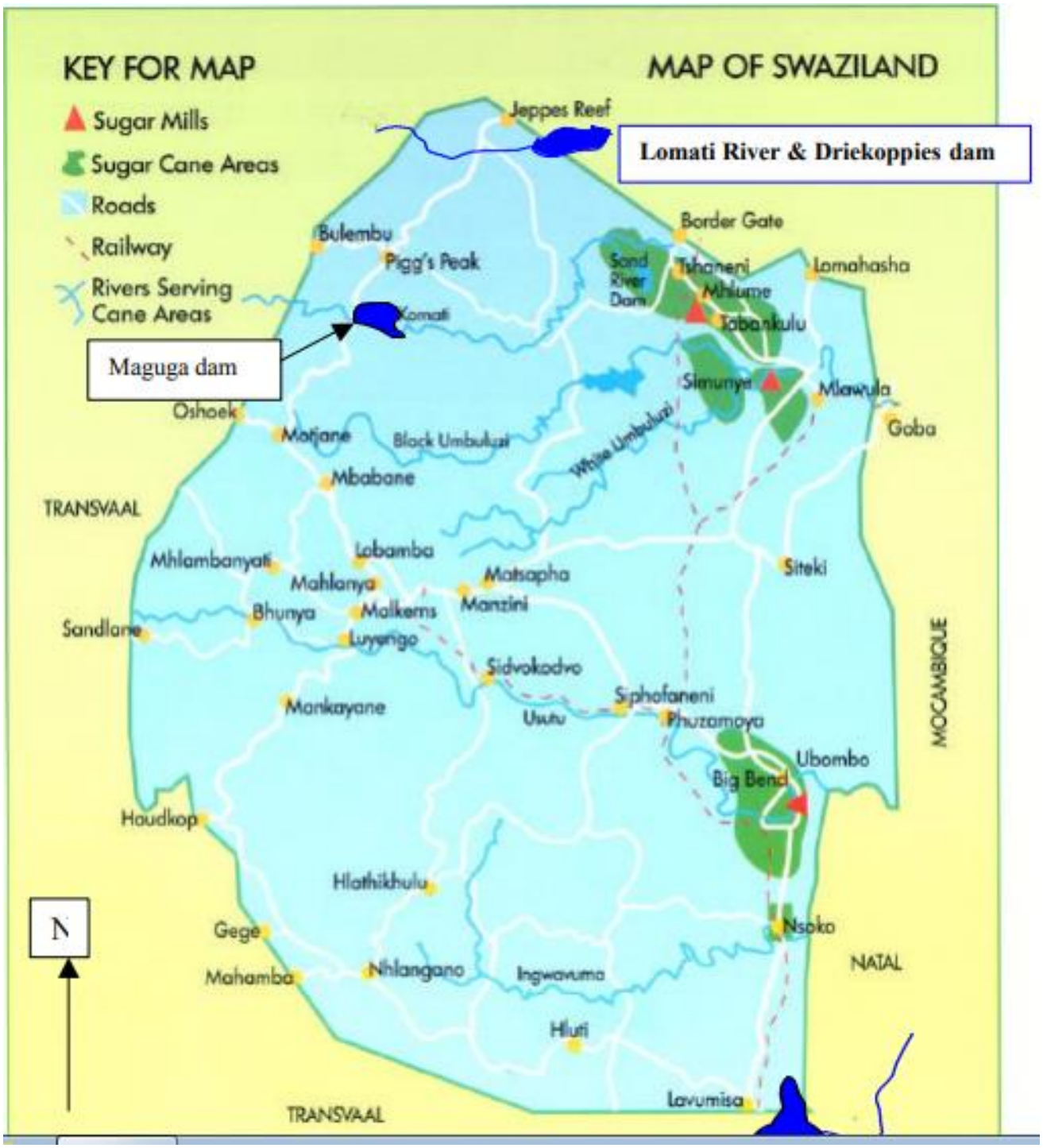

Figure 4.4: Sugarcane growing areas in Eswatini.

Source: Eswatini Cane growers Association 2014

4.5 Sugarcane production

An increase of 5% to 5,200,000 MT in the 2018/19 MY, from 4,973,571 MT in the 2017/18 MY is projected in Eswatini's sugar production, with increased sugar cane delivery to the sugar mills of high quality and improved factory recoveries at the mills. Also, the normal weather conditions, good rainfall received at the beginning of the year, as well as improvements in yields following the recovery from the drought conditions of the previous season contributed to the increase in production (GAIN Report 2019). The 2017/18 MY sugar production was revised upwards to 4,973,571 MT based on higher than expected sugar cane delivered to the mills for crushing. Figure 4.5 shows sugar cane and sugar production in Eswatini.

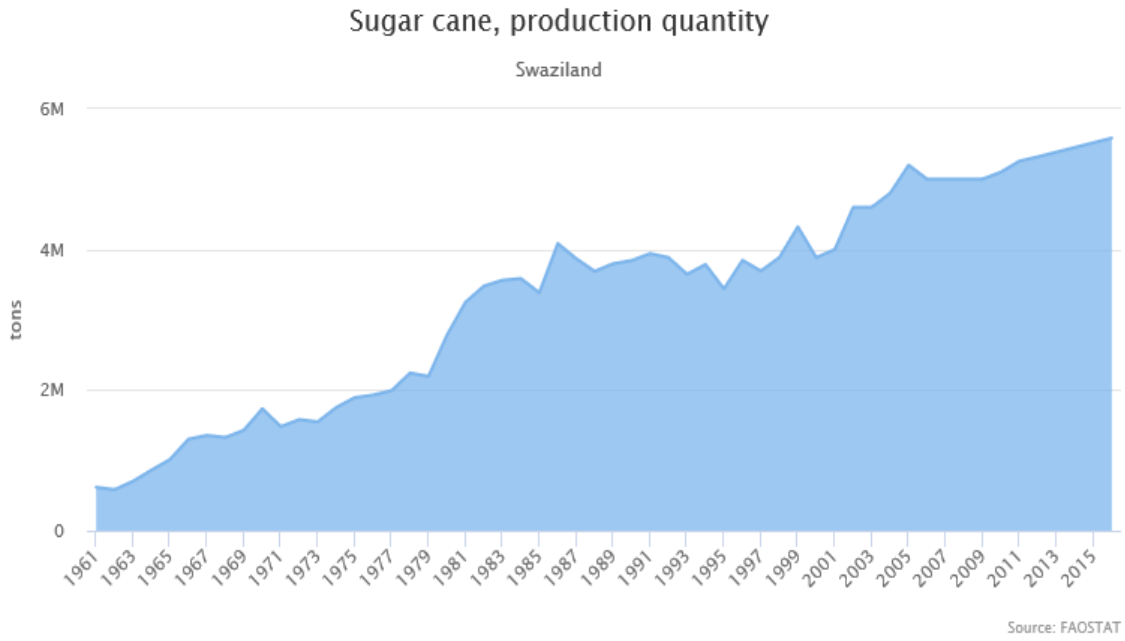

Figure 4.5: Production of sugar and sugar cane in Eswatini.

Figure 4.6 shows that the Eswatini area under cultivation has been on a steady increase since 2006/07. The 2017/18 MY area under cultivation is forecast to marginally increase by less than a percent to 62,000 hectares based on normal weather conditions and minimal investments in replanting following the impact of the drought in the previous season.

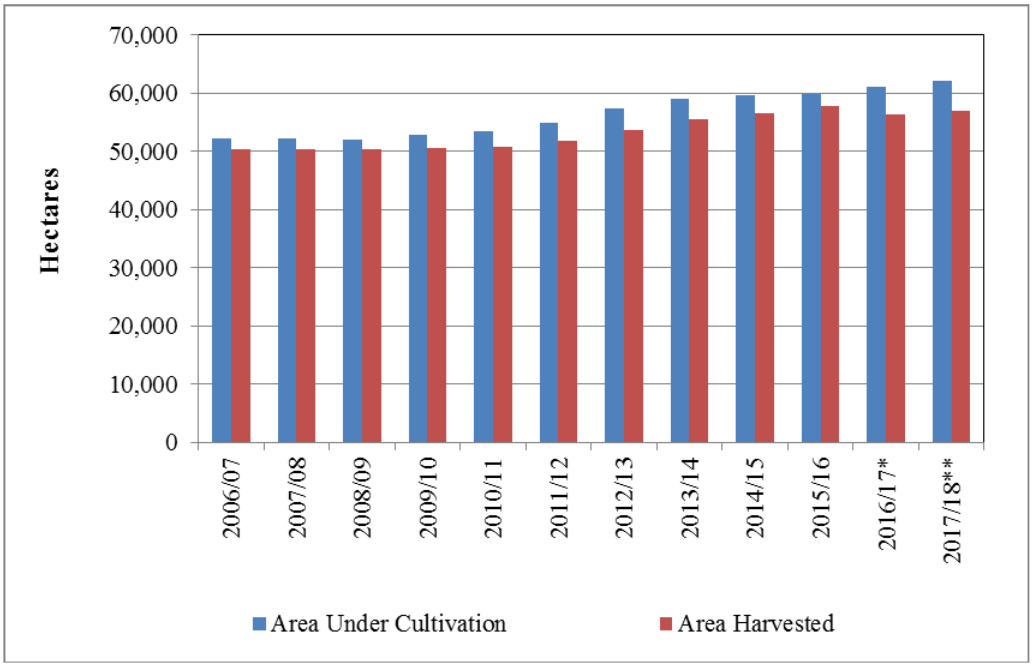

Figure 4.6: Area under cultivation and harvested.

*Estimate **Forecast. Source: Swaziland Sugar Association

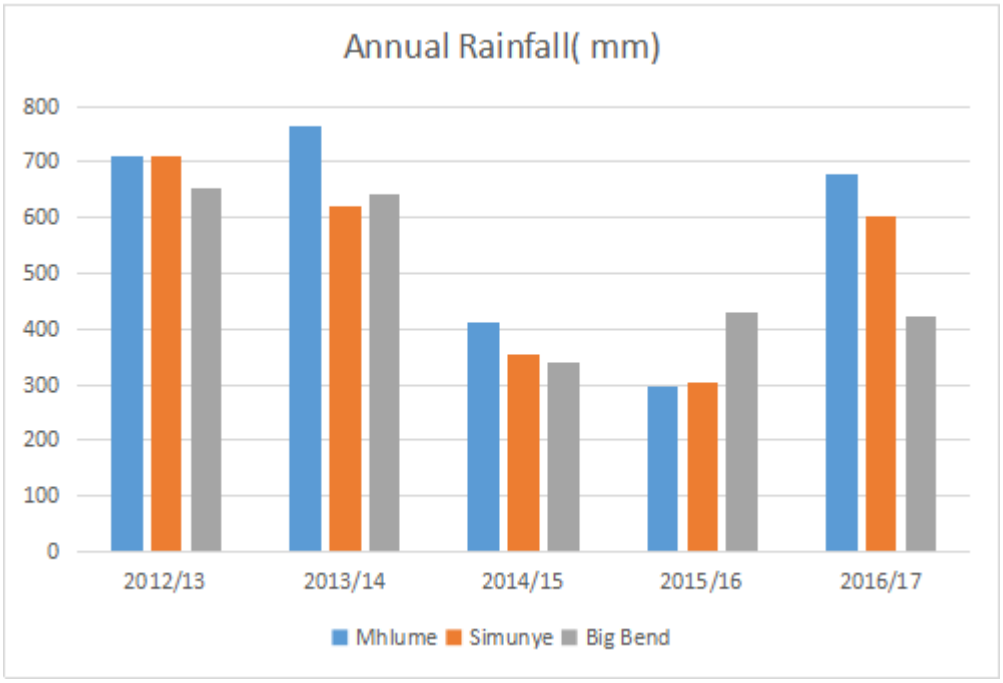

Figure 4.7: Annual rainfall (mm).

Source: Swaziland Sugar Association

Sugarcane growers: Eswatini sugar cane production is mainly under irrigation in the Lowveld by four types of producers as presented in Figure 4.8. Approximately 49% of the sugar production is produced by Miller owned estates followed by large scale producers (18%), medium size producers (12%) and small producers (21%). Classification of growers is based on the size of the farms planted. Small holder growers have less than 50 hectares, medium size growers have farms that are between 50 to 1,000 hectares and large-scale growers, including miller owned estates, have farms greater than 1,000 hectares (GAIN Report, 2019). Although small and medium sized producers account for a smaller quantity of the total production, the largest number of growers falls under these two categories. The combined yearly sugar production capacity of Eswatini's three sugar mills; Mhlume, Simunye and Ubombo, exceed 800,000 tonnes. The production of sugar in 1997 and 1998 was 475,000 tonnes each. In 2007/2008, the production was 631,236 tonnes and between 2009/2010 it was 605,656 tonnes, which reflected a drop in production. In 2010/2011 production further dropped to 582,019 tonnes. In 2014/2015, production was at 680,881 tonnes and 695,408 tonnes between 2015/ 2016, respectively. In 2016/2017 it dropped to 587,004 tonnes due to drought experienced by the country. For the period of 2017/2018 production increased to 650,126 tonnes. (Eswatini Sugar Association Reports, 2007 to 2018). The growing of sugarcane permitted to those growers who are registered with the sugar association and are given a quota by the Quota Board of the sugar industry.

Table 4.1: Number of cane growers

Number of Growers	2012/13	2013/14	2014/15	2015/16	2016/17
Miller owned	9	9	9	9	9
Large scale	9	9	9	9	9
Medium size growers	29	28	30	29	29
Small holder growers	412	414	428	450	446

(Source: Swaziland Sugar Association)

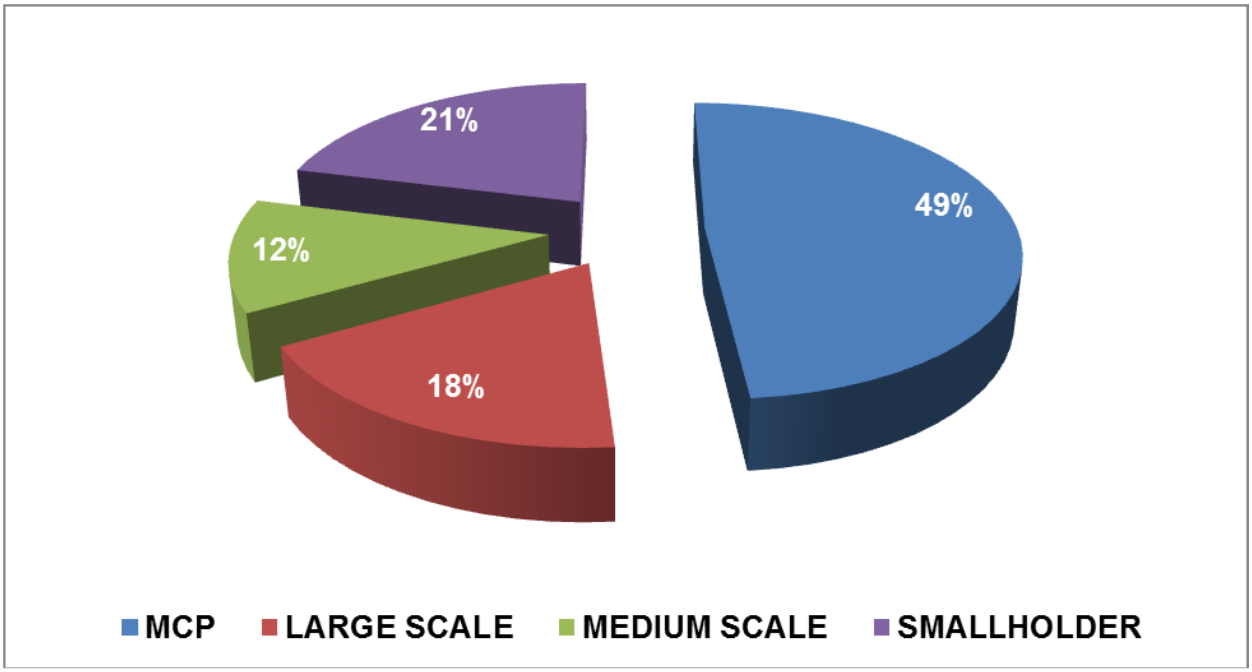

Figure 4.8: Contributions of Sugarcane production by grower category in 2017.

Source: Gain Report (2017)

As the sugar sector is primarily based on large-scale estate production, small holder farmers have been key stakeholders who participated in the sugar sector and have been included into the industry from subsistence or semi-subsistence agriculture. From 2000, sugar cane has resulted into large scale production reliant on 2 dams namely the Maguga and Bovane dams. The Maguga dam was completed in 2002 and has been operational since then. This project will irrigate an additional 8,000 hectares of cane field put into production. The Bovane dam on the other hand began working in the year 2004/2005. This dam brought 11,500 hectares under irrigation which is mostly small holder growers. These projects allowed a lot of farmers who depended on rain to combine individual farms into associations. Throughout this time, the region under sugar cane developed by 28% which mostly contributed by the extension of smallholder farmers has enlarged because of support received from government which include policies (United Nations Conference on Trade and Development,2000). Provision of irrigated water at a fee has also contributed to the success of small-scale sugar farming on the farms that are managed by the farmer's associations.

4.6 Exports

The Eswatini sugar industry sells both raw and refined sugar in five major markets namely, the United States, the European Union (EU), the South African Customs Union (SACU), COMESA countries, and the world market (Westlake, 2004). All the raw sugar produced in Eswatini is exported and SACU is the major market for Eswatini's sugar sector amounting 45 – 70% of sugar sales. As highlighted in the

USDA GAIN report (2019), Eswatini sugar exports is projected to increase by 12% to 760,000 MT in the 2019/20 MY, from 710,000 MT in the 2018/19 MY, based on a growth in sugar production and large available stocks. The 2018/19 MY exports were revised downwards due to lower sales in the European Union and South African Customs Union.

Eswatini benefits from tax exemptions to the United States under the Tariff Rate Quota (TRQ) allocation (GAIN Report, 2019). It is forecast that Eswatini will fully utilise its 2018/19 MY quota as the United States remains a premium market. Sugar sales to the EU market are expected to decrease significantly as returns and prices in this market would be less favorable following the changes in the EU's domestic sugar policies. Eswatini is expected to expand its exports to other regional and international markets. Table 4.2 shows the Eswatini sugar sales to various markets.

4.6.1 Export country destinations and trade

Eswatini is a beneficiary of the United States Tariff Rate Quota, allowing exports of raw sugar duty free to the United States. The annual Eswatini TRQ allocation of 16,849 MT has remained constant over the last several years. Eswatini always utilises its quota allocation each year and is expected to fully utilise the 2018/19 MY and 2019/20 MY quota allocation.

Refined sugar exports have been converted to raw sugar values using a factor of 1.07. Refined sugar exports to some EU countries such as Belgium are on ad hoc basis, driven by limited supply as the EU had a drought in the 2018/19 MY.

Table 4.2: Eswatini sugarcane exports and sales

Period	SACU Market (Including Eswatini)	Regional Market	EU Market	USA	World Market	TOTAL SALES
2005/06	316,455	138,256	152,201	27,756	1,999	636,667
2006/07	318,202	121,771	153,251	19,813	25,000	638,037
2007/08	307,232	90,352	188,220	15,935	25,000	626,739
2008/09	319,716	99,554	182,897	16,123	-	618,290
2009/10	321,783	25,638	247,692	-	-	595,113
2010/11	309,483	28,518	280,201	25,518	-	643,720
2011/12	309,911	80	314,830	-	-	624,821
2012/13	303,204	-	363,637		-	666,841
2013/14	307,918	-	339,250		-	647,168
2014/15	372,452	14,160	269,635	34,000	-	690,247
2015/16	400,081	33,100	238,618	28,219	-	700,018
2016/17	393,919	12,352	211,918	19,623	-	637,812
2017/18*	344,590	71,160	137,525	23,271	-	576,546
2018/19**	420,000	170,000	100,000	23,000	50,000	763,000

**Forecast, *Estimate

Source: Swaziland Sugar Association (2018)

Table 4.3: Raw sugar export

Eswatini Export Statistics					
Raw Sugar, HS170111, 170112, 170113, 170114					
Year Ending: March					
Reporting Country	**Unit**	**Quantity (tonnes)**			
		2015/16	**2016/17**	**2017/18**	**2018/19***
Reporting Total	**T**	**614,816**	**560,253**	**491,569**	**402,958**
South Africa	T	331,896	291,934	256,384	258,671
Italy	T	10,286	18,248	39,265	42,293
China	T	0	0	39,500	34,000
Portugal	T	70,233	54,877	24,945	30,956
United States	T	28,219	19,623	23,271	16,061
Kenya	T	0	2,000	66,475	10,687
Botswana	T	0	458	1,462	4,416
Belgium	T	1,119	2,057	1,764	3,269
Switzerland	T	108	9	182	1,129
Germany	T	2,586	1,882	2,064	673
Netherlands	T	4,651	3,958	4,174	495
Ireland	T	0	0	0	152
Poland	T	0	43	87	108
Romania	T	60,786	24,870	0	43
Canada	T	0	5	22	3
Mexico	T	0	2	2	2
Brazil	T	7	2	1	0
Croatia	T	25	0	0	0
Finland	T	48,723	27,460	0	0
France	T	0	0	1,011	0
Spain	T	25,000	85,216	5,760	0
United Kingdom	T	31,177	27,609	25,200	0

*Export figures up to February 2019

Source: Global Trade Atlas

4.6.1.1 United States Sugar TRQA

The United States allows preferential access for Eswatini's sugar under the Tariff Rate Quota (TRQ) programme. The total TRQ and re-allocations offered to Eswatini average about 23,000 MT annually, and Eswatini usually utilises its full quota as the U.S. market remains attractive as compared to other

markets such as the EU which has lower prices. It is forecasted that Eswatini will fully utilise its allocated TRQ in the 2018/19 MY.

4.6.1.2 European Union

Historically the EU has been the main market for sugar produced in Eswatini, accounting for between 24 – 55% of the Eswatini sugar sales. This means 300,000 tonnes per year, with 22,000 tonnes sold as direct consumption sugar. However, the reduced prices and returns have been as a result of the EU domestic sugar policy change. As a result, Eswatini exports to the EU are expected to significantly decline over time (GAIN Report, 2019). Eswatini and the EU have a free trade agreement, under the EU/SADC Economic Partnership Agreements (EPA) which was initiated in 2014 and implemented in 2016.

4.7 Policy, pricing and regulations

4.7.1 Price

The world sugar price has changed over the past decade in a specific way. Global market price has remained a dumped one with low prices and is expected to drop further as global production collides with healthier eating. Factors such as demand, stocks, supply, policy measures, exchange rates and climatic conditions have influenced the world sugar market (Maitah et al. 2016; Maitah & Smutka 2016; Rezbova et al. 2016a).

Figure 4.9: World price development.

Source: International monetary fund

Sugar prices for Eswatini have evolved over time. In 2015, a kilogram was at US$ 0.5 and US$0.58 in 2017. For the subsequent years, wholesale price of white sugar is about SZL9, 000/MT (US$642/MT). The retail price of sugar is based on the pre-packers and retailer private agreement or negotiations, and ranges from about SZL14 (US$1.00) to SZL18 (US$1.29) per kilogram (Global Agricultural information Network 2019).

4.7.2 Policy and regulation

The Eswatini Sugar Association (ESA) is the regulatory body for the sugar industry as mandated by the Sugar Act of 1967. The Act provides the legal regulatory framework on how the industry should operate. This could impact strongly on competitive performance and can also distort economic pricing signals and resulting allocations (Gittinger, 1982; Jaysekeram, Liebenberg & van Rooyen, 2004). This matter will however not be fully explored in this study (also see Chapter 1, p.12 and Chapter 6.5).

A license or quota is required for new entries which is allocated upon registration by the Sugar Industry Quota Board. The grower quota number which is issued to new growers is an agreement between the miller and the grower on sugar cane quantities to be supplied. The license also helps in ensuring that there is enough water for irrigation and the right to land. Growing of sugar cane is open to everyone, provided they meet the requirements.

ESA controls a collective payment system under which the annual profits from national sugar sales to all markets is returned to the industry net of the association's costs. The percentage net revenue that is allocated between the two parties is determined by an independent organisation. The self–regulated pricing and payment system has been an essential factor sustaining the success of the Eswatini sugar industry. The payments are based on budget projections which are reviewed quarterly. The risks of price fluctuations are cushioned through borrowing against shipment taken in the currency in which the shipment will be paid for. A major disadvantage; however, is that price signals to growers reveal the average rather than the marginal price fetched by exports. This may distort price signals and could encourage cane production, although more produce must be sold at reduced profits on the global market. This current policy regime will be used in this analysis.

4.8 Sugar by-products

4.8.1 Ethanol production

Currently there are no other commercial by-products from sugar cane such as fuel. However, one of the sugar mills and an independent distiller produce beverage grade ethanol, and feints (used for the

manufacturing of methylated spirit). These products are generally classified as by-products or backend products as they utilise molasses produced after the sugar production.

4.8.2 Electricity co-generation

The sugar industry uses bagasse to produce electricity that is further reused in sugar mills during peak production periods. None of the electricity generated from the sugar mills is supplied to the national electricity network due to lack of appropriate incentives and regulations by state controlled Eswatini Electricity Company.

4.9 Industry structure

The highest authority in terms of decision making on issues common to all the growers of sugar cane and the millers, is the Eswatini Sugar Association (ESA). It comprises of all growers involved in the production of sugar cane and millers and is established by the Sugar Act of 1967. The industry is regulated by this Act with Sugar Industry Agreement and ESA constitution from the right to grow sugar cane to sale of the final product. ESA offer support services to the whole industry's value chain including policy advocacy, marketing of sugar and byproducts, cane testing, agricultural research and extension, warehousing and distribution. The sugar cane growers and millers are equally represented by the association. Eswatini Sugar Industry and government have a good relationship, especially in ensuring the water security. The mutual and positive interaction in the construction of new dams and water storage facilities is key for ESA activities. The government fully supports the sugar industry in particular as ESA engage in debates of exploring new ways of renewing their different roles in the context of market conditions.

Eswatini has three mills namely: Eswatini Royal Sugar Corporation Ltd (Mhlume and Simunye Mills) and Ubombo Sugar Limited (Ubombo Mill). South African based sugar company TSB co-owns the Eswatini Royal Sugar Corporation Ltd, while Illovo Sugar Ltd owns Ubombo Sugar Limited. These mills, which are owned by the government (Tibiyo TakaNgwane), have membership in the Eswatini Millers Association. The Eswatini Cane Growers Association represents interests of all growers excluding Eswatini based miller owned estates. It is to be noted that South African-based sugar company Tongaat Hulett owns Tambankulu Estates but does not have a sugar mill in Eswatini. Figure 4.10 shows the main stakeholders and structure of the Eswatini sugar sector.

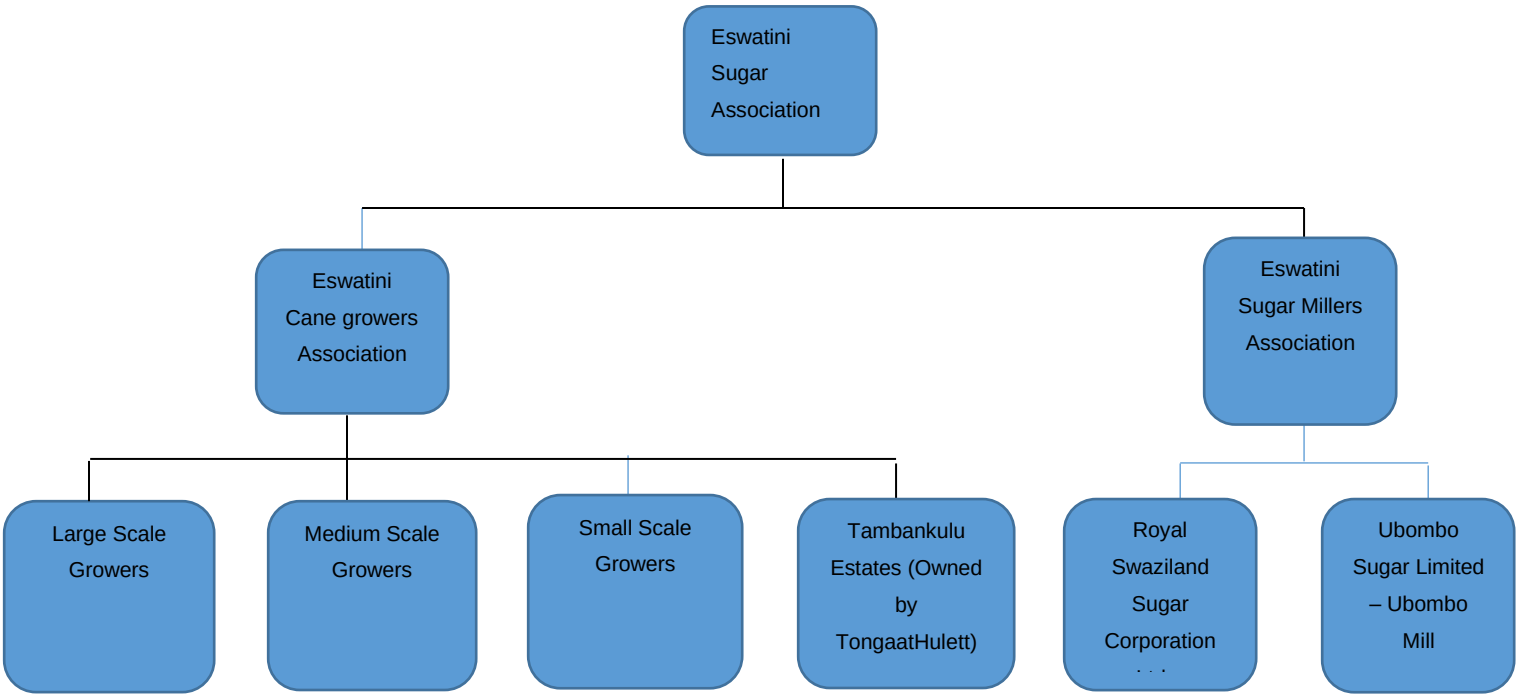

Figure 4.10: Structure of Eswatini sugar industry.

Source: Eswatini Sugar Association and Eswatini Cane growers Association

4.10 Eswatini sugar value chain

The value chain outline also shows the various sugar actors along the value chain including research and extension, producers (cane growers), sugar processors referred to as sugar millers, local or domestic, export and by-product markets, wholesalers, retailers and consumers. The main channels through which sugar reaches the consumer are wholesalers and retailers.

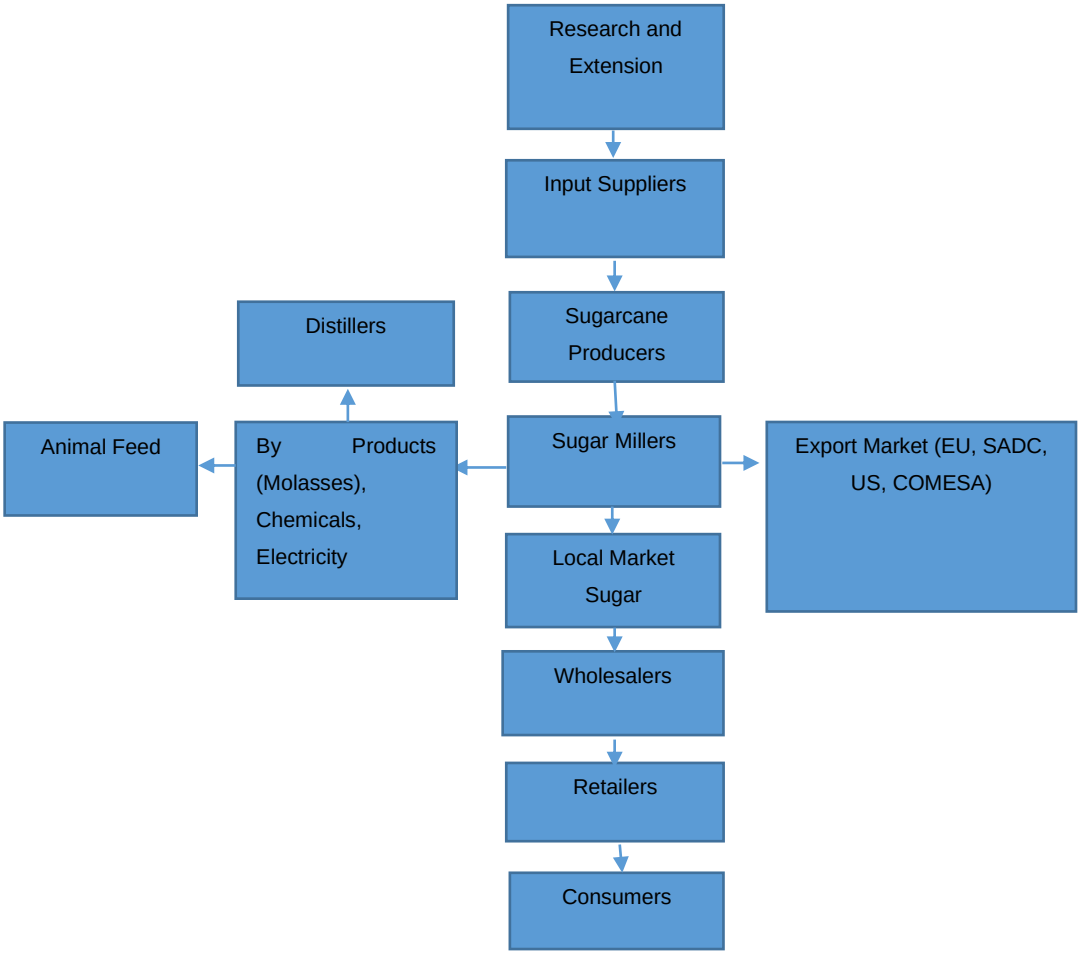

Figure 4.11: Value chain outline.

Source: Own compilation

4.10.1 Research and extension

Eswatini Sugar Association provides technical know-how to the industry to produce good quality sugar cane and ensure long-term viability and profitability of sugar cane growers. This is done by developing and promoting improved agricultural practices aimed at reducing production costs, increasing sugar cane yields and sustaining production in the long term. These are attained through conducting relevant research, providing an extension service (through a Service Level Agreement (SLA) with the millers), providing crop protection services, irrigation management, controlling and supplying healthy seed cane. ESA collaborates with the South African Sugarcane Research Institute in particular on research.

4.10.2 Suppliers of inputs

The production of sugar cane requires specialised inputs and chemicals to produce high quality cane. As highlighted by DAFF (2012), for sustainable production, it is critical that good suppliers of inputs are sourced. This not only helps in attaining quality produce, but also for traceability purposes where environment issues are of concern.

4.10.3 Producers

Producers are another important player in the sugar value chain. They comprise of miller owned estates, large scale growers, medium size growers and small holder growers. The small holder growers' affiliates under the farmer's association. These are important for the small growers as it allows farmers to meet and share information. They represent different interests in the sugar industry which amongst others include the government. The producers are expected to produce for the companies processing the sugar cane (millers), hence it is crucial that they produce high quality crop.

In a study that was conducted by Thabethe (2013), it was indicated that small scale farmers lacked technical and management experience and mentioned a need for better relationships between agricultural producers and sugar cane mills.

4.10.4 Sugar millers (processors)

The sugar cane which is brought by the producers is then processed into raw and refined sugar. The sugar is then exported and marketed locally. The sugar by-products which are chemicals and molasses are used by distillers and some are used to make animal feed.

4.10.5 Wholesalers and retailers

The raw and refined sugar produced from milling and processing is distributed to wholesale and retailers. The wholesalers package the sugar into bags and distribute to supermarkets. The product also reaches industries for beverage products and finally the consumers.

4.11 A summary assessment of the industry

It can be mentioned that the Eswatini sugar industry has been doing well over the years as stated above. This has been evidenced by the growth in yields and the production quantities. ESA, the regulating body for the industry, has assisted by offering support services to the whole industry's value

chain including policy advocacy, marketing of sugar and by-products, cane testing, agricultural research and extension, warehousing and distribution. The availability of water for irrigation and the availability of other markets outside the European Union has influenced the competitive performance of the sugar industry. It should be noted that although there are various opportunities for the industry, there are also some challenges with regard to competitiveness. As noted by Thabethe (2013), small scale farmers lacked technical and management experience which impact on the performance of the sugar cane production. The change in EU domestic sugar policy has resulted to reduced prizes and returns of the Eswatini sugar and as such, exports to the EU are expected to significantly decline.

4.12 Conclusion

This section provides a summary of the global and Eswatini sugar sector, with an emphasis on its background and structure of value chain, production over time and exports to various destinations both domestic and global. Although a substantial growth has been observed in the sugar industry dating back when it started in 1956 till to date as mentioned in this chapter, its growth ability on sustainable bases is not ensured (Gass, 2012).

The Eswatini sugar industry sells to five major markets which include the EU, the United States, the SACU, COMESA countries, and global market (Westlake, 2004). The industry has been exposed to global competition from producers which also affects the quantity and price and in response to this, profits are further reduced.

The industry was discussed with some highlights on the issues affecting the industry and considering the above sited problems, further analysis of the competitive performance is necessary. The current policy regime will be used as a framework of reference in this analysis. Proposals on the possible approaches to improve the competitive performance of the sugar industry will be discussed in the next chapters.

CHAPTER 5: RESULTS AND FINDINGS

5.1 Introduction

This chapter presents the results and findings of the first four steps of the applied analytical framework. Step 1 confirms the definition of competitiveness as used in this analysis for Eswatini sugar industry. The second step measures the industry's competitive performance empirically for the period from 2001 to 2019. Step 3 and Step 4 of this chapter then explore factors contributing either negative of positive to the industry's performance and how it fits into the Porter Competitiveness Diamond. From this analysis the fifth step of the framework will be proposing strategies to improve the industry's competitiveness in the next chapter of the study.

5.2 Defining competitiveness (Step 1)

As discussed in Chapter 2, Eswatini's sugar is export oriented as it is able to be competitive by trading its sugar in both domestic and international markets and achieve sustainable business growth whilst striving to earn at least the opportunity cost of resources, to sustain its performance and role in the national economy.

5.3 Measuring the competitive performance of the sugar industry (Step 2)

Step 2 of the framework of analysis involved measuring the competitiveness of the Eswatini sugar industry between 2001 and 2019. As discussed in the previous chapter (3), the relative trade advantage (RTA) method was selected and is based on the trade performance over the period of analysis. The analysis used data from both ITC and FAO, but ITC is preferred because the ITC database encompasses all activities, industries and commodities from all sectors of the economy which offers more comprehensive measurement of competitiveness as far as 'opportunity cost comparisons' is concerned, whereas FAO only consists of agricultural commodities and not from other sectors i.e., no opportunity costs as per all alternative industries and economic sectors (Boonzaaier & Van Rooyen, 2017).

5.3.1 Relative trade advantage (RTA) values

The sugar industry competitiveness rating is shown in Table 5.1 based on FAOSTAT and ITC data from 2001 to 2019 The FAOSTAT data was used for the Agricultural Based Competitiveness Index. Generally, the results reveal that the sugar industry recorded positive figures greater than one, except for the year 2001 and 2004. However, between 2009 and 2010 RTA values reflected a decline.

Notable, it can be concluded that the Eswatini sugar industry is generally competitive and shows a positive trend since 2001, in spite of some fluctuations in the industry's competitive performance (Table 5.1 and Figure 5.1).

Table 5.1: The competitiveness (RTA values) of Eswatini's sugar industry

Years	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
FAO	1.5	1.9	2.4	1.5	1.8	2.9	2.1	3.1	3.6	3.0
ITC	1.8	2.6	3.4	3.1	3.9	4.6	3.8	4.2	4.5	3.9
Years	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	
FAO	3.1	2.9	3.7	3.6	3.8	3.5	3.7	4.5	4.9	
ITC	3.5	3.4	3.8	3.7	3.9	4.1	4.5	4.7	5.2	

Source: Own calculation based on data from FAOSTAT and ITC from (2001 - 2019).

Competitive (RTA > 0); not competitive (RTA < 0)

The differences between the RTA values between the FAOSTAT database and ITC data is that FAO utilises only the agricultural commodities data whereas the ITC comprises data from all economic sectors. The basis of comparison is thus different; trends however are of similar nature as they follow the same trend movement, however with different figures. It can thus be concluded that the Eswatini sugar industry is more competitive when the RTA is calculated on ITC data compared to FAO data which is only agricultural base. The sugar industry is considered a strong player in the market environment globally, hence the high competitiveness values. The Eswatini sugar industry is part of the major exporters in the country and contributes almost 10% of the national GDP (GAIN Report, 2017).Evidently, making valuable contributions to the economy of the country. This findings have implications on the significant role the agriculture sector play in the economy of the country, hence government should deal with policy related bottlenecks that will hinder sector from long term growth. Other strategies will explored in the next chapter.

5.3.2 Trends in the competitive performance of the Eswatini sugar industry

The graph below, Figure 5.1, reflects the trends in the competitiveness of the sugar industry from 2001 to 2018. It can be noted from the graph that the Eswatini sugar industry is generally competitive, despite some fluctuations. Both trends (FAOSTAT and ITC), follow the same positive movement with varying figures. In 2010, the RTA values showed a decline. Through focus group discu
ssions, varying trends were identified and categorised into three phases which are discussed below Figure 5.1.

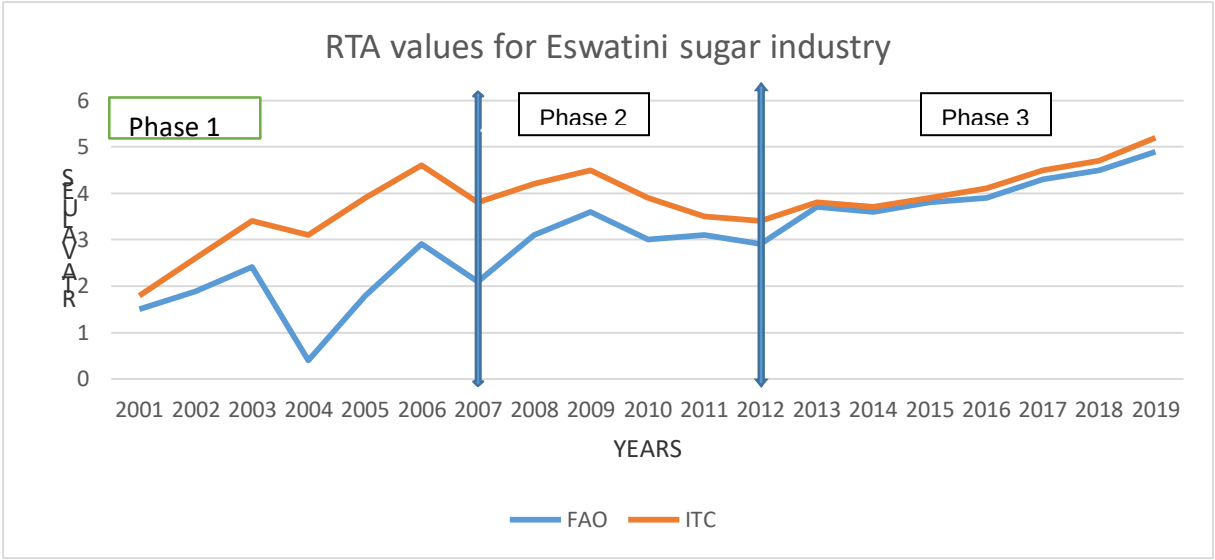

Figure 5.1: RTA Values for Eswatini sugar industry.

Source: Author's own calculation based on the ITC (2019) and FAO (2019) datasets

5.3.2.1 Trend analysis: Phase in competitiveness

From Figure 5.1 several phases can be derived:

5.3.2.1.1 Phase 1 - Increasing competitiveness (2001 - 2007)

During this period competitive performance shows a strong upward trend. The marketing and coordination of external marketing initiatives have been improved (European market, SACU) through the establishment of ESA, as discussed previously (Chapter 4). The sugar sector has benefited from the regional integration initiatives, especially in SACU, by being offered a very lucrative price. In addition, the sugar industry is also regarded as a delicate sector and hence is protected from the normal trade liberalisation. The sugar industry has been granted support by government because of the role it contributes towards the Eswatini economy due to efficient cane production and technically efficient sugar production plants. This has been done through the expansion of water resources by construction dams for irrigation through ESWADE (refer to Chapter 4). This is further enhanced by successful access to premium markets to which the Eswatini sugar is sold.

5.3.2.1.2 Phase 2: Fluctuating and declining competitiveness (2007 - 2012)

This phase shows a fluctuating ‘bubble type’ of trend, first increasing till 2009, then gradually declining to 2012. It is worth noting from the trend that there was increased competitiveness from 2007 to 2009. This was basically due to an increase in production in the farms which resulted to the total cane production increase by 2.9% from 4.9 million tonnes to 5.1 million tonnes from the previous year. There was also a shift in the market price due to favorable foreign exchange rate movements increasing the total value sales by 25.1%. In contrary, between 2006 and 2009, the European Union (EU) reformed its sugar market regime which consequently led to the reduction of the sugar price by 36%. This had a negative impact, not only to the European sugar beet producers, but to sugar cane producers as well. Considering this, the Eswatini sugar industry was also affected by the removal of the preferential trade arrangements, in particular the sugar reform with a decline in the EU price by 21.6% in 2009/10. In September 2009, the trading agreement sugar protocol expired and further led to reduced prices in the EU market from 100% to 90% which affected the export earnings (Central Bank of Eswatini Report, 2009/10). Due to the price drop, existing small-scale producers have not been able to pay off their debts. This threat of price fluctuation forced some farmers out of production as they were exposed to limited resilience and coping strategies. This all resulted in reduced competitiveness since 2009, as quantities in production was reduced affecting the profit returns of the sugar industry.

5.3.2.1.3 Phase 3:Recovery and sustained increasing competitiveness 2013 onwards

The competitiveness of the Eswatini sugar industry has improved partly due to the depreciation of the Swazi lilangeni (local currency) against the United States dollars at an exchange rate of 1 USD = 10.5518 ZAR in 2013 making exports more attractive. The United States dollar is used to quote the sugar price and transactions in any other currency are thus converted and paid in dollars. In addition, most of the industry's inputs is manufactured within the region, mainly South Africa hence the relation between input costs and prices which rely on the rand/dollar exchange rate. Notable, an appreciation or depreciation of a rand will ultimately influence the industry's competitiveness, either positively or negatively.

Increasing the competitiveness of the Eswatini sugar industry can also be found in the support of €120m which the country received from the European Union (EU). These funds were distributed between 2008 and 2017 towards the infrastructure (construction of bridges, roads and canals) which opened opportunities for new smallholder cane growers into the supply chain. Grants have also been developed by the government of Eswatini to support new farmers in establishing sugar cane production.

5.3.2.1.4 Impact of the value of the currency

It has been noted from previous studies that there is actually a link between the exchange rate and competitive performance (Esterhuizen and Van Rooyen, 2006; Boonzaaier, 2015; Barr, 2019), with some correlation between the RTA and the strength of the local currency. The appreciation of the local currency in the value of Euro against the Rand also affected the smallholder sugar farming sector as it was the main factor contributing to a 21% drop in the sucrose price between 2002 and 2005. On the same note, the RTA was observed to fluctuating positively while the local currency weakened. The local currency was approximately 10.45 to the dollar and it started to decline in 2004 when Lilangeni appreciated, as shown in Figure 5.2. Between 2007 and 2012, the RTA pattern has been fluctuating and decreasing with the exchange rate movements increasing. Since 2013, the RTA and the exchange rate corresponded as the local currency gained strength while the competitiveness was increasing in a sustained manner.

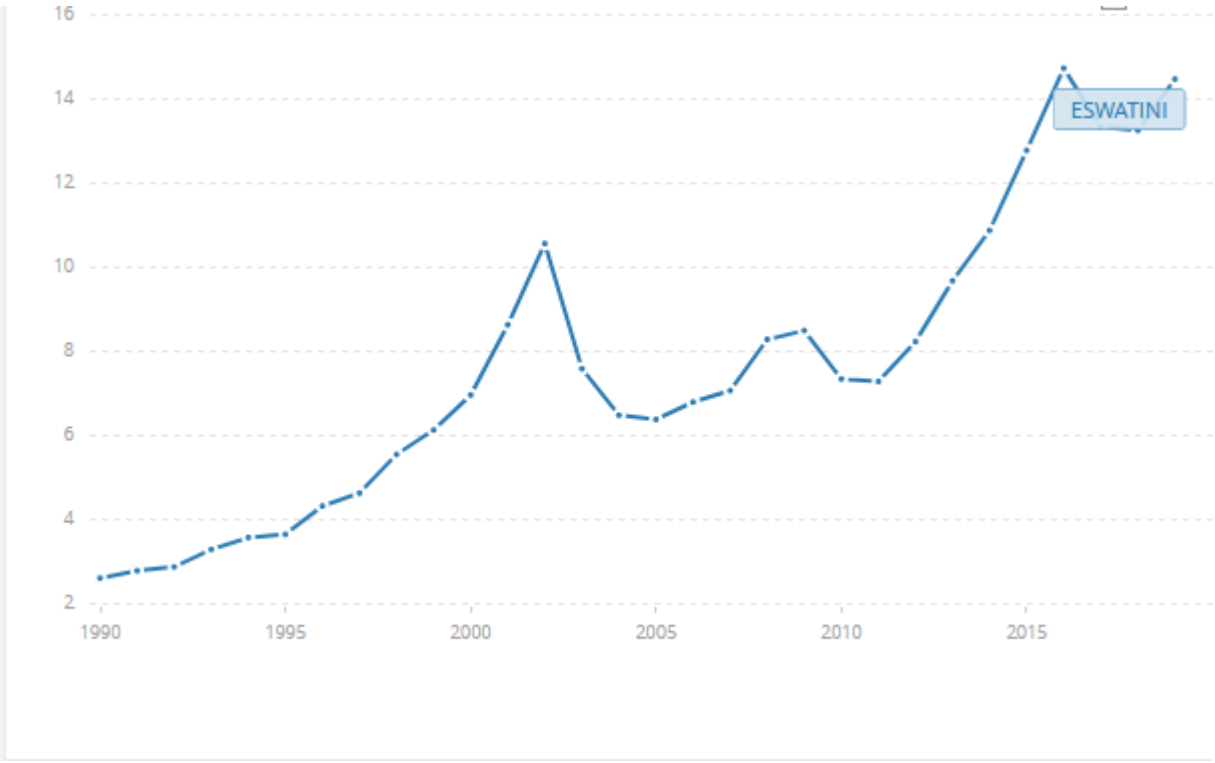

Figure 5.2: Nominal exchange rates movements from 1990 to 2019.

Source:data.Worldbank.org

5.3.2.1.5 Conclusion

It can be concluded from the above trend analysis that the Eswatini sugar industry is generally competitive though fluctuating. This has been a result of a subsidy from the European Union which buys an annual quota that is more than the world ruling price. This qualified Eswatini to export under a special preferential sugar agreement and drove competitiveness during phase 1. However, sustainability of such competitive performance could be questioned, and this is shown in phase 2. Currency fluctuations also played a role in phase 3 and investment in infrastructure impacted positively on phase 3.

It can further be concluded that a range of factors, internally and externally impacted on competitiveness; the Eswatini sugar industry can be sustained without direct government support. The comprehensive analysis of factors impacting on competitive performance will; however, be required to detail enhancing and constraining factors in steps 3 and 4 below.

5.3.3 Comparison of the Eswatini sugar industry's competitive performance with other countries

An analysis of the competitive performance of the Eswatini sugar industry since 2001 to 2019 against its rivals was measured by RTA to determine its relative performance in the global business environment. The RTA technique describes the country's share of the world market on the same commodity relative to its national share of all traded goods considering both imports and exports, relative to the size of the local economy. It must thus be noted that the RTA measure does only allow directly rated comparisons as it only relates to the performance of a selected industry relative to its national trade performance i.e., Eswatini sugar competitiveness in relationship with the Eswatini economy, compared to such performances of other sugar trading countries. RTA values, therefore, gives an indication of the relative competitive performance of an industry viz-à-viz that of competing industries in other countries and economies.

As illustrated in Figure 5.3, the RTA values based on data from ITC shows a general upward trend for all countries since 2001. Brazil showed to be performing relatively more competitive than the sugar industries in other sugar producing countries, with higher values compared to its rivals. Brazil is the world's largest sugar producer and exporter amongst 100 producing countries and 70 exporting countries. Brazil produced 21.6% of the world total and accounted for 43.4% of all exports between 2005 and 2011. It exported 49.7% of the world total exports which was almost four times more than that of Thailand, which is ranked the second largest exporter. The relation of sugarcane production and the area occupied by the crop explains the reason Brazil is the biggest producer of the world. There are relatively low operating costs compared to the other giant sugar producing countries and, Brazil leads in the technology needed for the production of sugar and ethanol. New technologies are continuing to develop as public and private investments are applied to research (Santos et al., 2012). Even though Brazil is the largest exporter in the world, it has experienced fluctuations in the past years due to unfavorable weather and economic conditions.

The sugar industry in Thailand has been growing at a fast rate, hence is also considered the largest exporter of sugar in the international market ranked second after Brazil and fifth in the world for sugar production. This has since been evidenced by the expansion in both the production of sugarcane and the sugar mill. Sugar exports almost doubled in the early nineties with an average of 3.1 million tonnes per year from that of eighties. The growth in the regional markets, higher domestic production, low internal consumption relative to total production and favourable export policies contributed to the positive trend in exports. Thailand is supplying its sugar to the growing markets in Asia and thus has led to the country expanding its production. Thailand is centrally located in Asia and its therefore,

being favoured by its positioning to the growing markets in Asia which permits shipping advantages with low costs not available to competitors outside the region. The government policy of maintaining high domestic sugar prices has contributed to increased production and exportable surpluses. Farmers have shifted from producing rice to cane. As new investments are approved by the government, new sugar millers gain entry to the industry. Despite the situation on world markets, profits for Thai millers have been maintained as the domestic price for sugar is higher than that on world markets.

The South African sugar is one of the world's leading competitive producers of high-quality sugar with approximately 2,3 million tonnes of sugar produced per annum (South African Sugar Industry Directory, 2019/2020). Out of the total that is being produced, about 76% is marketed within the South African Customs Union (SACU).

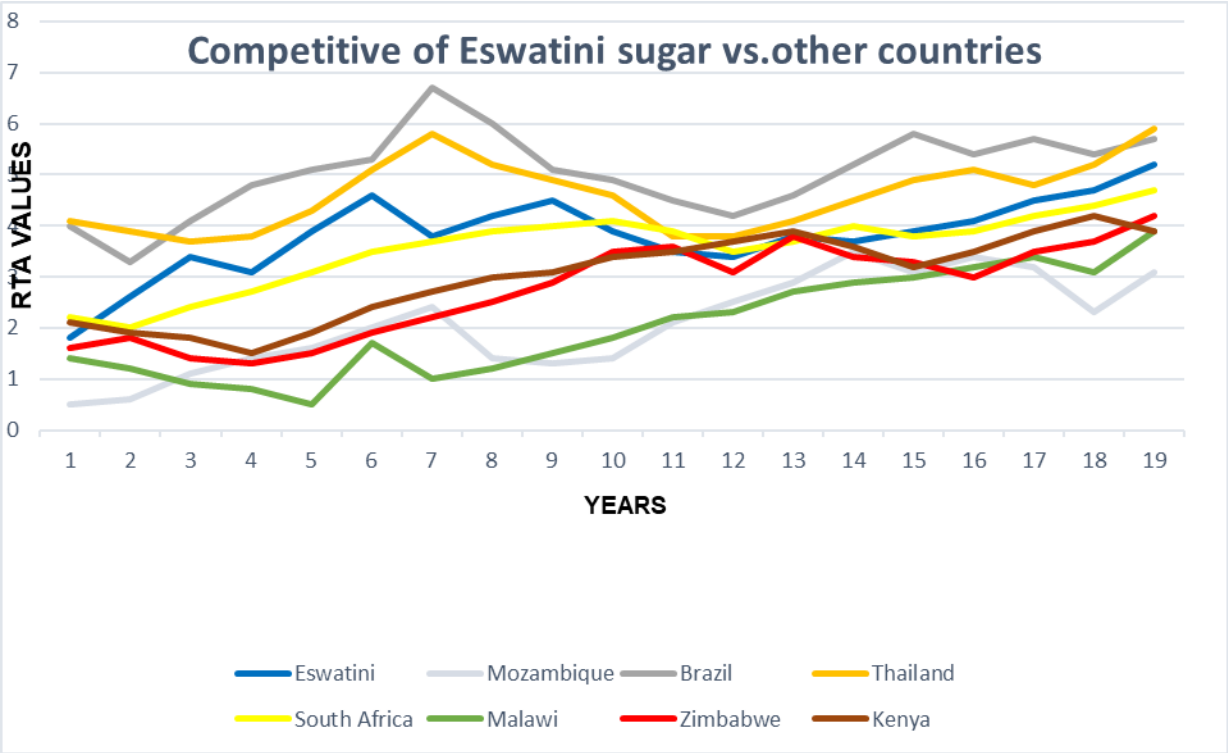

Figure 5.3: The competitiveness of the Eswatini sugar industry relative to its competitors with fluctuations RTA.

Source: Own calculations from ITC data (2019)

Based on the trends indicated above in Figure 5.3, the results indicate the competitive performance of the Eswatini sugar industry when benchmarked against other sugar producing countries at domestic and international level. All the countries were competitive as the RTA values were above 0. It was noted that Eswatini "ranks" third to Thailand (4.61) with an average RTA value of 3.82; Brazil being the first with RTA values of 5.04. South Africa ranked fourth with RTA values of 3.56, followed by Kenya

(3.01), Zimbabwe (2.75), Mozambique (2.09) and lastly Malawi scoring 2.03. The results reveal that Eswatini is relatively competitive; though fluctuating when compared with its rivals, the African countries.

5.4 Factors influencing the competitive performance of the Eswatini sugar industry (Step 3)

The previous sections objectively and quantitatively measured the competitive performance of the sugar industry in Eswatini from 2001 to 2018 which gave an overview on how the industry has been doing in the global business environment compared with its rivals. However, these analysis does not state in detail why such trends are occurring, hence, it will be explored further in step 3. These will look into the factors contributing to the competitive performance through the Eswatini sugar executive survey (ESES). To obtain this information, a questionnaire, which was based on the Porter's Diamond model (also refer to Jafta, 2014; Boonzaaier, 2015; Sibulali, 2018; Barr, 2019 re recent executive surveys in different long term crops industries in Southern Africa) was employed to gather opinions and views from the sugar experts on the factors that either constrain or enhance the competitive performance of the sugar industry. Purposive sampling was used whereby the questionnaire was distributed to a panel of experts who understand the sugar industry for the survey. Based on the opinions of the respondents the different factors were rated. Table 5.2 indicates the respondents of the sugar industry value chain who participated in the Eswatini sugar executive survey (ESES).

Table 5.2: Respondents of the study

Respondents to participate	Number of respondents	% of total respondents	Volume/Value produced
Large sugar producers	4	8.9	430,000 tonnes
Medium sugar producers	10	22.2	60,000 tonnes
Small holder producers	20	44.4	2,5 million tonnes
Millers	3	6.7	4,9 million tonnes
Marketer	1	2.2	760,000 MT
Input providers	4	8.9	-
Service providers	3	6.7	-

Data source: SES (2019)

The results in Table 5.2 also presented the respondents' share in terms of volume flows along the sugar value chain and small holder producers, 44.4% being the highest contributing group of the total sample size. It is worth noting that some respondents were involved in more than one position with

regard to executing roles within the value chain. As presented above, it must be noted that the distribution of the responses was relatively unbalanced as the primary producers were the highest, hence could indicate some bias in the industry value chain.

For the purpose of the analysis, it must be noted that a 'recent view' perspective was requested from participants, i.e. no long-term trend analysis, on recent experiences and knowledge about the industry. From this it can be concluded that the ratings given can be used to explain recent experiences – for example, the impact of recently and new infrastructure, labour productivity, markets, exchange rates, policy changes, etc.

5.4.1 Ascertain factors influencing the competitiveness of the sugar industry

A total 48 factors affecting the competitiveness of the industry were identified from the interviews held with the experts and the responses were captured and analysed. The ratings of each factor were calculated per the Likert scale rating and an average score was obtained per question. These scores were plotted on the radar diagrams for all the determinant factors of the Porter's Diamond (Step 4) to get an impact rating score.

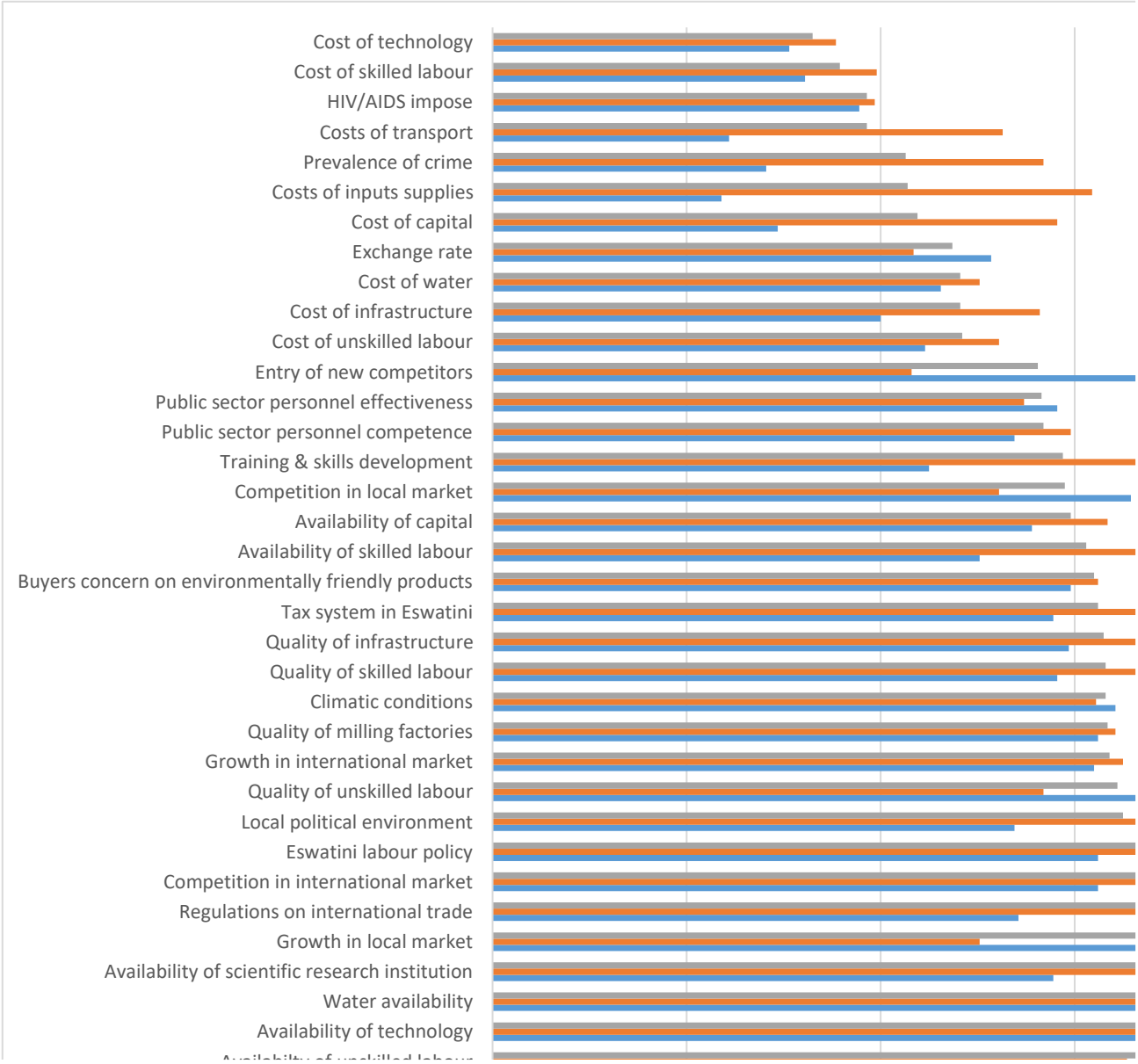

Figure 5.4: Rating of factors influencing the competitive performance of the Eswatini sugar industry.

Cluster 1 = Sugar producers; Cluster 2 = Sugar processors; General industry = average sugar industry

5.4.2 Top ten most constraining and most enhancing factors of competitive performance

In Table 5.3, the top ten factors constraining and enhancing the competitiveness of the Eswatini sugar industry are listed and clustered into the Porter Competitive Diamond six determinants. A rating of 5 show a most enhancing impact on competitive performance, whereas a rating closer to 1 represents a most constraining impact on competitive performance.

Table 5.3: The ten most enhancing and constraining factors of Eswatini sugar

Major constraining factors	Ratings	Major enhancing factors	Ratings
Cost of technology	1.65	Availability of local input supplies	4.52
Cost of skilled labour	1.79	Regulation standards (safety, quality of products	4.08
HIV/AIDS impose	1.93	Local buyers' willingness to buy	4.06
Cost of transport	1.93	Regulations on environmental standards	4.01
Prevalence of crime	2.13	Local market size (share)	3.98
Cost of input supplies	2.14	Availability of financial institutions	3.95
Cost of capital	2.19	Production processes	3.95
Exchange rate	2.37	Reliability of local input supplies	3.92
Cost of water	2.41	Availability of telecommunications and internet services	3.85
Cost of infrastructure	2.41	Eswatini trade policy	3.84

Source: Sugar Experts Survey (2019)

Rating scores out of 5

*Impact rating (1 = Most constraining; 3 = Neutral; 5 = Most enhancing)

5.4.2.1 Constraining factors

The highest constraining factors impacting negatively on the competitive performance of the Eswatini sugar industry are: cost of technology, cost of skilled labour, HIV and AIDS impose, cost of transport, prevalence of crime, cost of local input supplies, cost of capital, exchange rate, cost of water and cost of infrastructure. The uncertainty and fluctuation of local currency against world major currencies is critical as the Eswatini sugar industry is export oriented and it will affect the competitiveness of the industry when the local currency appreciate. In contrary it can be noted that weak currency is positive for sugar exports while strong local currency impacts badly on the imports such as inputs, equipment etc. All these constraining factors will be addressed in the next chapter (6).

5.4.2.2 Enhancing factors

The factors with the most positive influence on the competitive performance of the Eswatini sugar industry with impact ratings of adjacent to 5 are: availability of local input supplies, regulation standards (safety, quality of products, local buyers' willingness to buy, regulations on environmental standards local market size, availability of financial institutions, production processes, reliability of local input supplies, Eswatini tax system, availability of telecommunication and internet and Eswatini trade

policy. To improve and sustain the industry's competitiveness, it is crucial that constant monitoring on these factors is carried out on a regular basis.

5.4.3 Principal Component Analysis (PCA) for interrelationships analysis

The principal component analysis was used to analyse the variations of opinions among the experts in the different factors identified. See Appendix B for the highly correlated and the least uncorrelated variables of the six Porter's determinants. The interrelated items not having a correlation of at least 0.3 should be rejected.

5.4.4 Validation of questionnaire- Cronbach's alpha

To test for reliability, a Cronbach alpha test was conducted on the Porter's determinants which were identified and then grouped into six factors. These factors were then subjected to the test based on their PCA ratings. The alpha is expressed as a number ranging between 0 and 1. When the coefficient value is closer to 1, it implies that the internal consistency of the items correlated is greater. Table 5.4 show the Cronbach alpha test that was carried out on the items on the six grouped factors and all the results were above 0.700 which is close to 1. The tool therefore, is considered reliable.

Table 5.4: Cronbach alpha test for SES

Production factors		
Cronbach's alpha test	Cronbach's alpha based on standardised items	Number of items tested
0.707	0.709	9
Demand factors		
Cronbach's alpha test	Cronbach's alpha based on standardised items	Number of items tested
0.714	0.710	5
Related and support		
Cronbach's alpha test	Cronbach's alpha based on standardised items	Number of items tested
0.714	0.697	8
Government support		
Cronbach's alpha test	Cronbach's alpha based on standardised items	Number of items tested
0.748	0.769	6
Firm, strategy and rivalry		

Cronbach's alpha test	Cronbach's alpha based on standardised items	Number of items tested
0.704	0.700	6
Chance factors		
Cronbach's alpha test	Cronbach's alpha based on standardised items	Number of items tested
0.770	0.770	2

Data source: Extraction Method: Principal Component Analysis; SPSS

Value chain analysis

The value chain actors were classified into two clusters making up the Eswatini sugar industry. The primary cane producers, which is cluster 1 consists of small holder farmers, medium and large. The second cluster comprises input providers, millers/processors, marketers (Eswatini sugar association) and the service providers. The general industry comprises all the value chain players of the Eswatini sugar industry. The rationale behind the classification system is to check if the opinions and experiences of the respondents differ based on the roles they play within the value chain system (Abei, 2017; Mtshiselwa, 2020). Indeed, from the responses, variation of opinions was noted from both clusters for example, in the demand factors cluster 2 were more affected as it deals more with trading and markets than cluster 1. It can be mentioned that responses from the ESES were not separated into the cluster analysis.

Table 5.5: The ten most enhancing and constraining factors of Eswatini sugar for the value chain clusters

Cluster 1: Producers			
Major constraining factors	**Ratings**	**Major enhancing factors**	**Ratings**
Cost of inputs	1.18	Local buyers' sophistication	4.71
Cost of transport	1.22	Local market size	4.64
Prevalence of crime	1.41	Growth in local market	4.41
Cost of capital	1.47	Availability of local input supplies	4.23
Cost of technology	1.53	Regulation standards (safety, quality of products)	3.94
Cost of skilled labour	1.61	Availability of unskilled labour	3.91
HIV/AIDS impose	1.89	Efficiency of local supplies	3.87
Cost of skilled labour	1.94	Production processes	3.74

Cost of infrastructure	2.00	Land policy	3.68
Cost of unskilled labour	2.23	Availability of technology	3.65
Cluster 2: Business sector			
Major constraining factors	**Ratings**	**Major enhancing factors**	**Ratings**
Cost of technology	1.77	Availability of local input supplies	4.81
HIV/AIDS impose	1.97	Availability of financial institutions	4.69
Cost of skilled labour	1.98	Availability of telecommunication and internet services	4.58
Entry of new competitors	2.16	Regulations on environmental standards	4.49
Exchange rate	2.17	Availability of skilled labour	4.31
Growth in local market	2.51	Regulations on international trade	4.25
Cost of unskilled labour	2.61	Production processes	4.16
Cost of transport	2.63	Availability of scientific research institution	4.12
Cost of water	2.73	Eswatini trade policy	4.11
Public sector effectiveness	2.74	Availability of technology	3.98

Source: ESES (2019)
Rating scores out of 5

The ratings showed that there is relatively high level of alignment for both clusters on the top most enhancing factors which was observed to be low as they had three similar factors; availability of local input supplies, production processes and availability of technology. This observation shows a solid alignment in the industry, thus affording opportunities for better collaboration among the value chain players. The producers, referred to as cluster 1, were most concerned about the input and transport costs to affect the competitiveness and small-scale holder farmers being the most affected. The most affected were the small-scale holder farmers. The respondents further expressed the prevalence of crime and the cost of capital to negatively influence the industry's competitiveness. Notably, cluster 2 actors considered cost of technology, HIV/AIDS impose and the cost of skilled labour to constrain the

industry. These findings will be further explored through the Porter's Diamond and strategies will be developed in Step 5 to improve the competitiveness of the industry.

5.5 The Porter Competitive Diamond: Analysing the determinants of competitiveness (Step 4)

This step of the analysis involves grouping the 48 factors identified by ESES (see Table 5.6) into the six major determinants of competitiveness according to the Porter's Competitive Diamond model (Porter 1990; 1998). This will allow a strategic analysis as it clusters factors together to strengthen the impact. A mean score was obtained for the cluster i.e. for all factors as per a determinant. The six main determinants of competitiveness, according to the Porter Diamond are: production factor conditions (PF); demand and market conditions (DF); related and supporting industries (RS); strategy, structure and rivalry (FS); government support and policies (G); and chance factors (C). Table 5.6 and the radar diagram in Figure 5.5 indicate the average rating scores of the determinants.

Table 5.6: Major determinants

Average scores			
Major determinant	**Cluster 1**	**Cluster 2**	**Industry**
Demand factors	3.96	3.12	3.54
Related and support industries	2.94	3.95	3.45
Government support and policy	3.14	3.67	3.41
Strategy, structure and rivalry	3.42	3.3	3.36
Production factors	2.68	2.98	2.83
Chance factors	2.14	2.69	2.42

The analysis above indicates that four determinants revealed to enhance the competitiveness of the sugar industry with scores of above 3. The enhancing determinants being: the demand factors (3.54/5), related and support industries (3.45/5), government support and policy (3.41/5) and the strategy, structure and rivalry, scoring 3.36/5. The production and chance factors were constraining determinants regarding the performance of the industry with value scores of 2.83/5 and 2.42/5, respectively. Through the observations from these findings, it can be confirmed that the Eswatini sugar industry is generally competitive and that constraining factors needs to be attended to while maintaining enhancing factors. The determinants will be further explored below.

5.5.1 Value chain differences

When cluster 1, cluster 2 and the general industry were compared, findings indicated relative similarities in their views, although actual ratings between clusters differed, i.e. the 'intensity' of views. The cane producers in cluster 1 generally experienced more constraining factors as opposed to

cluster 2 which are processors. This could be that primary producers are more prone to production challenges which include climate change, price fluctuations, etc. This observation shows the different decision-making environments in which the actors are functioning and the similarities of views will help in linking the actors at decision-making industry level.

The rating of demand factors differed with producers viewing it most positive influence towards the competitive performance of the industry; the business sector however only rated it only fourth most contributing. This observation relates to market conditions and the surety of producer markets- a factor apparent for a regulated industry such as sugar in the Eswatini context. The business cluster on the other hand rated support and related industries as most enhancing. The ratings are shown in the radar diagram, Figure 5.5.

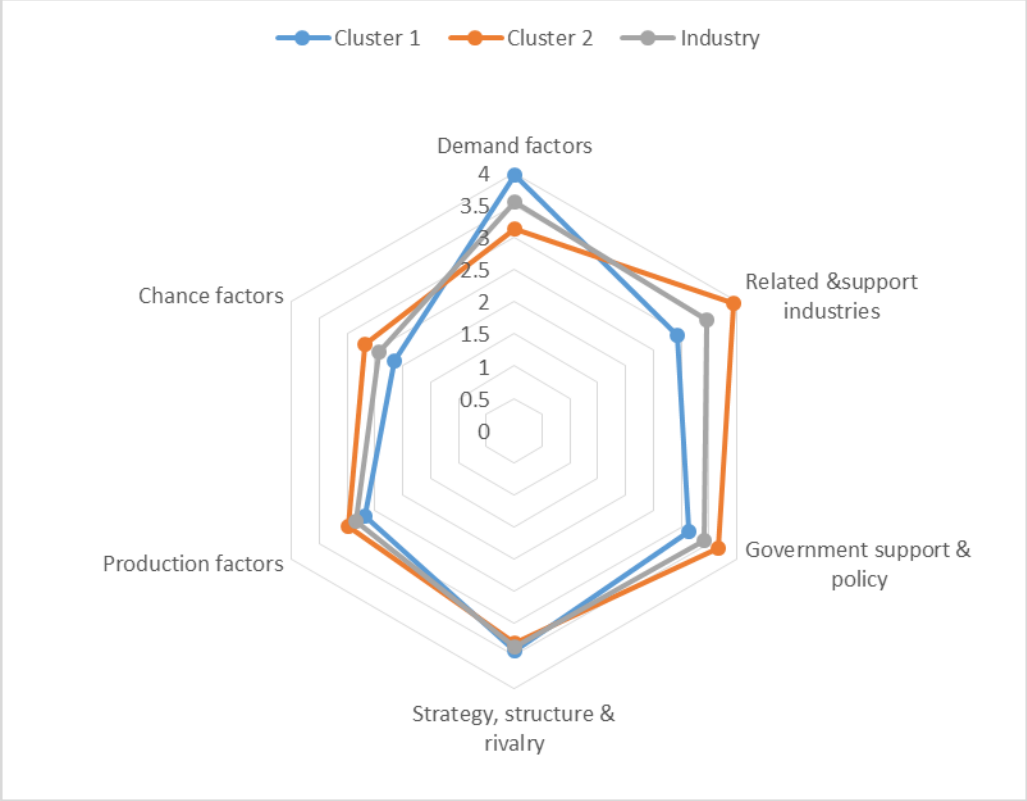

Figure 5.5: The impact rating of the six Porter's Diamond determinant factors on the competitiveness of the Eswatini sugar industry.

*Notes: 1 = most constraining; 3 = neutral; 5 = most enhancing

Source: ESES (2019)

5.5.2 An analysis of the Porter's determinants

This section will discuss, in detail, all the factors within the determinants which are enhancing and constraining the competitive performance of the sugar industry.

5.5.2.1 Production factor conditions

Production factor conditions are basic to the production process throughout the value chain. Figure 5.6 illustrate the results mentioned by the respondents that were influencing the industry's competitiveness. Both clusters rated this determinant below 3 (2.14/5 vs. 2.69/5) with an average score of 2.83/5, implying to generally constrain the competitive performance of the industry.

For cluster 1, role players involved in the production sector, availability and quality of unskilled labour were the most enhancing factor with ratings of 3.91/5 and 3.59/5, respectively. For the sugar industry, low skilled labour is always available as the crop is mostly grown in the rural areas where jobs are in demand. As such, trainings are carried out for those engaged in the cane production. Another factor that was enhancing the industry was the availability of technology as it received a rating of 3.43/5. The availability of water was indicated to be enhancing as it received a rating of 3.41/5. Irrigation water is available through the development of Maguga and Bovane dams by the Eswatini Water Development Programme (ESWADE) through Eswatini government. This was initiated to promote irrigation to producers, thereby improving production (Dlamini, 2012). In a study on analysing agribusiness in Eswatini conducted by Dlamini (2012), it was found that water for industrial and production is readily available, which is an enhancing factor to the agribusiness sector. Lastly, the quality of milling factories and climatic conditions were observed to marginally enhance the industry with score ratings of 3.12/5 and 3.21/5, respectively.

The most constraining factors for cluster 1 actors were cost of capital (1.47/5), cost of technology (1.53/5) and the cost of skilled labour (1.67/5), cost of infrastructure (2.0/5), quality of infrastructure (2.97/5), availability of capital (2.78/5), cost of water (2.31/5), cost of unskilled labour (2.23/5) respectively. Maintaining the irrigation system is costly for the primary producers and some of the roads leading to the cane fields are not in a good condition. Also, the cost of specialised technology services was considered to have a negative impact on the competitiveness of the industry as maintenance of specialised machinery and technologies, with a relatively weak skilled labour force, is costly.

For cluster 2 value chain players, the most enhancing factors indicated were availability of skilled labour, quality of skilled labour, availability of technology, water availability, availability of unskilled labour, climatic conditions and quality of milling factories. For the skilled labour, it implies that there are qualified personnel locally, with the range of required skills to perform efficiently towards meeting the industry's goals and requirements. According to the respondents (ESES, 2019), the local institution provides skills necessary in the agricultural field for example agronomy and also cropping

and transporting of cane, etc. Additionally, the government continues to send candidates to the neighboring countries for quality skill development courses relevant to the sugar industry.

Factors that were viewed by cluster 2 as constraining the competitive performance of the industry were: cost of technology, cost of skilled labour, cost of infrastructure and cost of capital with high commercial interest rates. The cost of technology negatively influencing the sugar industry is in contrast with the availability of technology. These include internet services and equipment used by the industry. All the equipment used is not manufactured locally, hence it is costly to import and maintain it.

The agribusiness actors (cluster 2) had more positive factors rated as opposed to the primary producers' value chain players, providing a greater competitiveness space. The primary producer (cluster 1) struggle to secure financing, or rather have little capital to invest, more so because the primary producers mostly consist of small holder farmers who produce under Swazi Nation Land, with no collateral to secure loans from financial institutions. These actors also lack contact with international market actors (Janvy & Sadoulet, 2005; Daviton & Gibbon, 2002; Reardon & Baret, 2000). In contrary, cluster 2 (agribusiness) which is buyer oriented are to ensure that there is a reliable flow of products along the value chain and there is availability of educated labour, knowledge in terms of production, marketing and distribution. This explains why cluster 2 has more positive factors as opposed to cluster 1. Generally, the findings indicate that the production factors have a negative influence on the sugar industry's competitiveness. These findings are in line with the previous studies conducted on competitiveness, which also showed that production factors are constraining the competitive performance of the agribusiness commodities (Abei, 2017; Jafta, 2014; Sibulali, 2018).

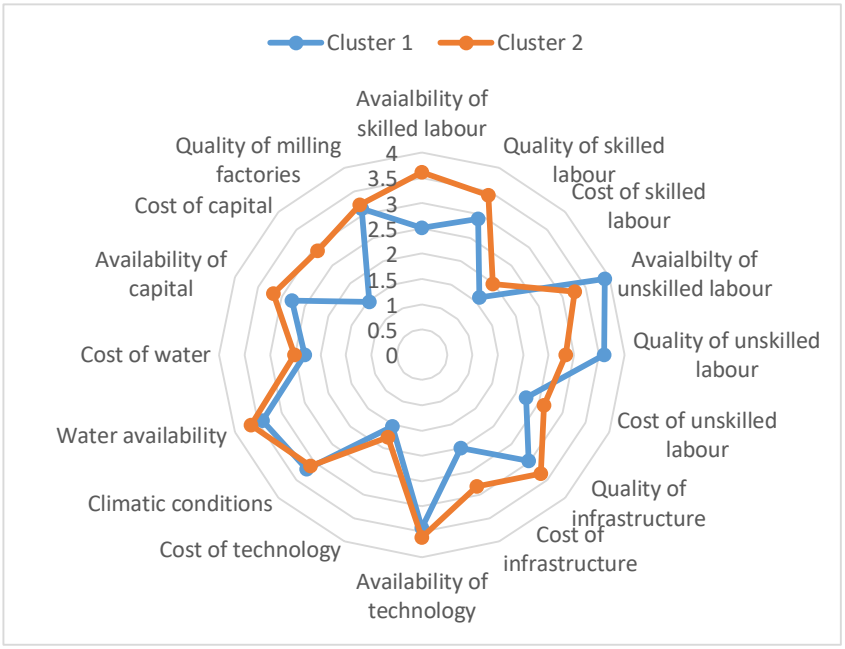

Figure 5.6: The Production factors determining the competitiveness of Eswatini sugar industry.

Ratings: 1 = highly constraining; 3 = neutral; 5 = highly enhancing

Source: ESES (2019)

Variation of opinions

The principal component analysis (PCA) was applied to determine the variation in views under this determinant. Most of the factors were highly correlated amongst the respondents, indicating extracted values of above 0.3. The factors that differed in views between the two clusters were: availability of skilled labour, quality of skilled labour, quality of unskilled labour, quality of infrastructure and availability of capital. The varying opinions between the clusters show that the value chain actors operate independently. For example, in terms of availability of skilled labour for cluster 2 is readily available, while for cluster 1, the small-scale holder, mainly its unskilled labour that is available. Also, the availability of capital for the agribusiness is easily accessed through the banks, yet for primary producers, especially for smallholder, it is not easily available as most financial institutions require a collateral. Factors that were relatively correlated were cost of skilled labour, availability of unskilled labour, cost of unskilled labour, quality of infrastructure, cost of infrastructure, availability of technology, cost of technology, climatic conditions, water availability, cost of water and quality of milling factories. These factors will need to be strengthened for the actions to be taken in improving the sugar industry.

5.5.2.2 Demand factors

As described by Porter (1998), a cluster of demand conditions are another determinant factor of competitive advantage and as such, five factors were identified from the ESES rating to influence the sugar industry's competitiveness. The factors influencing both clusters and the industry are illustrated in Figure 5.7. These factors were viewed to enhance the competitiveness of the industry. Factors with highest scores for both clusters at industry level were the local buyers' willingness to buy the sugar cane for cluster 1 and sugar for cluster 2 with a rating of 4.06/5, respectively.

Enhancing factors that were considered by cluster 1 were local buyers (4.71/5), local market size (4.64/5), growth in the local market (4.41/5) and international market (3.1/5). The actors in cluster 1 are primary producers of the cane which is demanded by the processors. As evident in the Gain report of 2018/2019 the local sugar consumption is expected to grow by 2% from 53,000 MT to 54,000 MT due to an increase in population and strong demand from food and beverage manufactures, as sugar is used as a main ingredient. The market size has a direct bearing on size and cost productivity in that bigger markets allow firms to exploit economies of scale. This confirms Porter's view that home demand has an influence on how industries respond to the needs of their customers. He further argued that local firms continue to improve their competitive positions to meet high standards as required by the market.

Factors that cluster 2 players viewed to enhance the competitive performance of the industry were local buyers, local market size, growth in international market and buyers' concern with environmentally friendly products. The sugar industry of Eswatini is export driven, as confirmed in the Gain report that sugar exports are expected to increase by 12% from 680,000 MT and between 45 to 70% of Eswatini's sugar is exported (Gain report, 2019). Moreover, Eswatini is a beneficiary of the United States Tariff Rate Quota (TRQ), which allows it to export raw sugar duty free to the United States. A certain percentage of sugar is allocated to the exporting country to be imported to US and exports beyond the stipulated quantity are then subject to a tariff rate of about 150%. Even though new has levied tariffs for the other commodities, no new tariffs have been executed for imported sugar.

An assessment of the environmental impact for sugar with regard to production, processing, recycling and utilisation has been done according to (ESES, 2019). The sugar industry does not generate harmful chemical substances and the product also does not affect the surrounding environment. The byproducts of sugar are used as raw material in producing other products. The industry meets standard specifications which include food safety standards and certifications (Eswatini Sugar Association Report, 2020). This standard helps the industry to be competitive in the global market.

Sugar can thus be viewed as an environmentally friendly product with ratings of 3.12, which is slightly above neutral and is thus positively influencing the competitiveness of the sugar industry.

Growth in the local market was expressed by cluster 2 to be relatively constraining the competitiveness of the industry since most of the produce is exported. Variations of opinions among both clusters in two factors were noted. These were buyers' concern with environmentally friendly products and local market growth and there was a consensus in all the other factors that were correlated. The different ratings were because cluster 2 is business oriented as opposed to cluster 1, hence there is more engagement and familiarity when it comes to marketing matters.

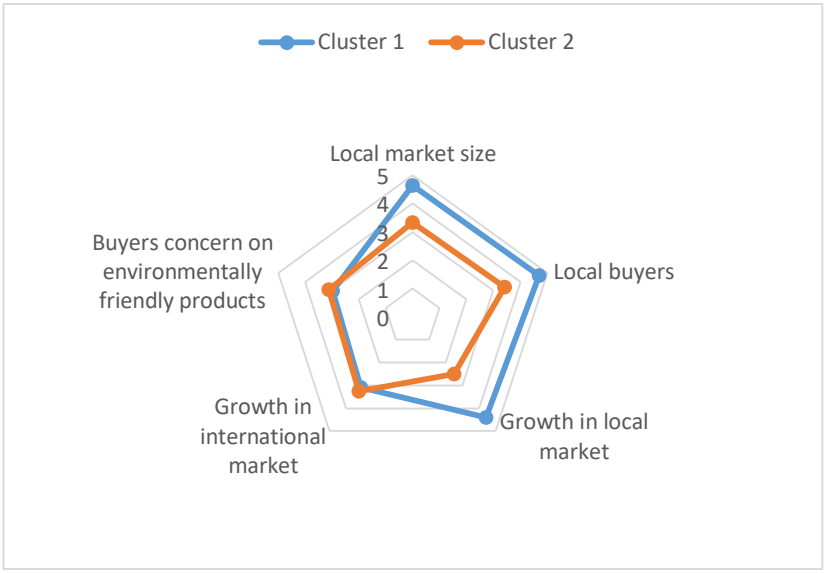

Figure 5.7: The demand and market factors determining the competitiveness of the Eswatini sugar industry.

Ratings: 1 = highly constraining; 3 = neutral; 5 = highly enhancing

Source: ESES (2019)

Variation of opinions

The communalities extracted values were used in the correlated factors for the principal component analysis in relation to demand factors. The results indicated that only one factor differed in opinion for the actors along the value chain and this was growth in local market. This factor was impacting negative on the agribusiness as about 90% of the sugar is exported, while there is potential for growth in the local market for the primary producers. The rest of the factors were highly correlated implying that the industry can take advantage of these factors by employing strategies that will further improve the competitiveness of the sugar industry.

5.5.2.3 Related and supporting industries

This determinant deals with competitive factors in the 'related and supporting industries' cluster that has a direct influence on the performance of the sugar industry. The respondents observed seven identified factors to be enhancing the competitive performance of the industry. These were: availability of local input supplies, regulation standards (safety and quality of product), availability of financial institutions, efficiency of local supplies, availability of telecommunication and internet services, electricity supplies and availability of scientific research institutions. The costs of transport, costs of input supplies and training and skills development were observed to be constraining the competitiveness of the industry as illustrated in Figure 5.8.

The availability of input supplies received a high rating of 4.52/5 for the industry in general. This is due to the fact that inputs are readily available and., or if not available can be sourced easily from South Africa without any restrictions on importation. The regulation of standards was observed to be enhancing to the competitive sugar industry, receiving a rating of 4.08/5. The first organisation to obtain certification under the International Standards Organization (ISO) quality management system ISO 9001:2000 was the Eswatini Sugar Association. This certificate was awarded in September 2001 as an acknowledgement of high-quality standards which the organisation had committed to implement to meet the international expectations (Eswatini Sugar Association Annual Report, 2014). Another factor mentioned above enhancing the industry's competitiveness is the availability of financial institutions which rated 3.95/5. Availability of finance is crucial since the lack of financing by commercial banks and other organisations translates to inadequate working capital at the industry level where the producers are unable to finance farm operations by cash. The country has organisations which play a vital role by lending money to farmers. These institutions include Eswatini Investment and Development Corporation, the Enterprise Trust Fund and Eswatini Bank.

Most of the factors were viewed by cluster 2 actors to be enhancing to the industry, except for cost of transport which was generally constraining the performance of the industry. Even though most of the factors revealed to enhance the industry, there were variations of opinions between the value chain actors. The factors which were observed to be uncorrelated were: training and skills development, cost of input supplies and availability of scientific research institutions. The different views of the players indicate that they function independently and were affected in different ways. For example, the costs of input supplies mostly affect the cane producers in cluster 1. For cluster 2, training and skills development was viewed as enhancing the industry as it has been evident that over the years the industry has done a remarkable job in terms of developing skills needed to optimise the operation of the industry. Also, availability of scientific research for cluster 2 indicated to enhance the industry as relevant research is conducted through collaborating with the South African sugar cane research

institution for improved service delivery. These varying views will be addressed in the next chapter on the strategies to improve the competitiveness of the sugar industry.

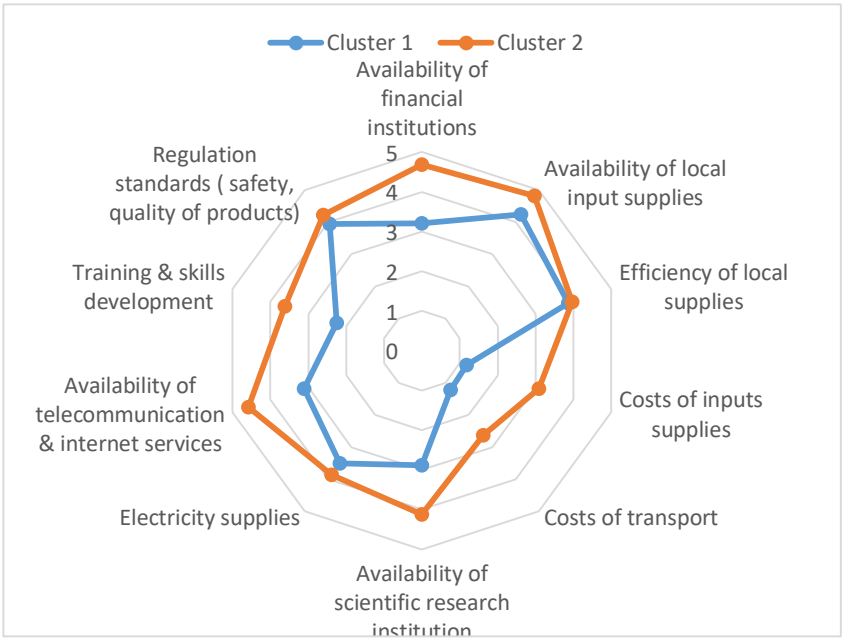

Figure 5.8: The related and supporting industries determining the competitiveness of the Eswatini sugar industry.

Ratings: 1 = highly constraining; 3 = neutral; 5 = highly enhancing

Source: ESES (2019)

Variation in opinions

The principal component analysis was applied to the ESES responses to determine the differences in views of both clusters within the value chain industry with regard to related and supporting industries factor determinant. To show the variances in opinions, the results revealed that most of the factors were correlated with scores ranging from 0.838 to 0.471. Out of the nine variables identified, three were observed to vary in opinion as these factors impact differently on the clusters. These factors include cost of input supplies, availability of scientific research institutions and training and skills development. For example, in the case of training and skills development, the smallholder farmers felt that they have not been capacitated enough in all the areas, yet the processors felt a lot has been done with regard to capacitating the staff. Also, the cost of input supply were viewed to constrain the primary producers while for the agribusiness, in particular the suppliers, it was enhancing the industry. This therefore, explains the variation in opinions. For the smooth functioning of the sugar industry more efficient chain governance and coordination should be considered. The factors that both clusters were in consensus with include: availability of financial institutions, availability of local input supplies,

reliability of local input supplies, cost of transport, electricity supplies, availability of telecommunication and internet services and regulation standards (safety, quality of products).

5.5.2.4 Strategy, structure and rivalry

This is the way industries are formed, organised and managed, as well as the nature of domestic rivalry are considered in this determinant. As indicated in Figure 5.9, three factors mentioned by the respondents were observed to enhance the competitive performance of the sugar industry with an average score of 3.36/5, respectively. These findings were rated above for cluster 1, yet for cluster 2, some received a low rating below 3.

Among the factors that were identified to be enhancing was the entry of new competitors for cluster 1 with a score of 3.46/6, possibly because if water for irrigation are readily available and land in place, then farmers can venture into production. Farmers venturing into sugar cane production are those registered and allocated a grower quota number by the Sugar Industry Quota Board. The requirements for new entries is a license or quota. This ensures that the producers have enough water to irrigate the cane, the right to use land. The quota is an agreement between the producer and the miller regarding the quantities to be produced and supplied (SSA, 2016). As the quota does not bring restriction on the sugar cane production, any farmer can produce cane provided they meet the requirements. This will definitely bring good competition in the local market among the producers and consequently volume produced, and quality of the cane will be improved. In this case, the competition in the local market was rated 3.29/5 for the primary producers. This confirms Porter's notion that domestic rivalry compels industries to improve quality and innovation (Porter, 1990). The quality of the sugar exported to the global market will also be improved which will ultimately influence the international market competition (3.43/5).

To identify the differences among the views of the respondents from both clusters under the strategy, structure and rivalry determinant, the PCA was conducted and variations of views on two factors were expressed by respondents. These were competition in local market and entry of new competitors. For cluster 1, which is the primary cane producers, all the rated factors were marginally enhancing. For the processor, which is cluster 2, competition in the local market received a rating of 2.61/5, which is a relatively low rating.

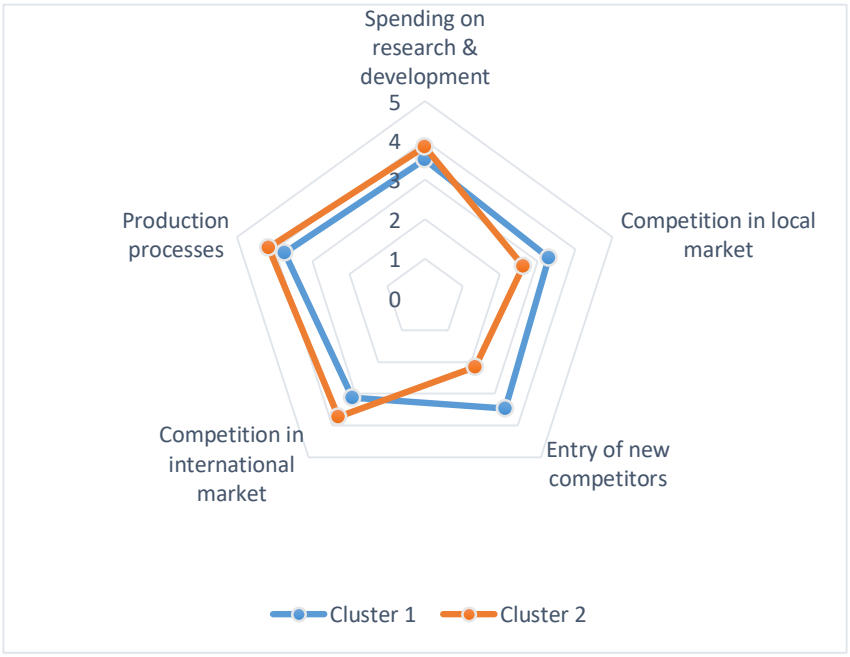

Figure 5.9: The strategy, structure and rivalry determining the competitiveness of the Eswatini sugar industry.

Ratings: 1 = highly constraining; 3 = neutral; 5 = highly enhancing

Source: ESES (2019)

Variation of views

To identify the differences among the views of the respondents under the strategy, structure and rivalry determinant, the PCA was conducted on the five factors to determine the highly correlated factors together with the uncorrelated factors. The results revealed that two out of the five factors indicated varying opinions in the value chain players. These factors were competition in the local market (0.725) and entry of new competitors (0.602). In the case of producers for example, as more producers venture into producing cane, more competition will be experienced pushing them to produce quality products thus impacting positively on the industry's performance. As such for the processors, the concern was more on the competition in the international market. Due to this variation in opinions, the approaches to improve the competitiveness of the industry might not be relevant to the other players within the industry. Both actors were relatively in consensus with spending on research and development, production processes and competition in the international market.

5.5.2.5 Government policy and support

The role which the government is expected to play in economic development is a vital role towards its country and industry's competitiveness. Government's influence can either be positive or negative. Most of the identified factors showed to enhance the competitiveness of the sugar industry with ratings

above 3 for both clusters. As illustrated in Figure 5.10, industry actors observed that regulations on environmental standards (4.01/5) and the Eswatini trade policy are the most enhancing factor (3.84/5) to the industry's competitiveness. Factors that were observed to enhance the competitive performance of the industry for both clusters were Eswatini trade policy, land policy and Eswatini labour policy. It was gathered from the responses that Eswatini does comply with international standards for example the ISO 9001:2000. This was found to enhance the competitiveness of the sugar industry. The enhancing factors for the producers/cluster 1 were; land policy scoring 3.68/5, regulations on environmental standards scoring 3.62/5, Eswatini trade policy scoring 3.57/5 and Eswatini labour policy with a score of 3.12/5.

For cluster 2, all the factors revealed to enhance the industry with the exception of two factors which indicated to constrain the performance of the industry. These factors were public sector personnel competence (2.98/5) and public sector personnel effectiveness (2.74/5). There was relatively a high degree of consensus in most of the rated factors for both clusters.

Eswatini has a source–based tax system where both residents and non-residents are taxed on income from a source in Eswatini. The government has been trying to encourage private businesses to expand operations through tax incentives and a special economic zone, but so far with only limited success (Eswatini Index of Economic Freedom, 2020). The country's poor record on human rights discourages many investors from investing, therefore, some policies need to be changed. Policy making should be removed from the hands of the King to give financial and investment freedom to investors. This will be discussed in details under step 5. The country has a long history of political stability which is safe and a secure environment that supports the development of projects which are aimed at improving the social and economy of its citizens. In terms of policies, the country has open trade together with the government policy which supports trade through developing the manufacturing sector as it is viewed to be the driving force of economic and social development.

The labour policy was regarded by cluster 1 as average with a 3.12 rating and was considered relatively moderate by the agribusiness entity (cluster 2). The relatively moderate rating on labour issues is a concern for long term stability in the international market as it has the potential of being a sticky point in organisations and in the country. It is therefore, in the industry's interest to keep up with the issues to ensure that labour and workplace policies are aligned to local legislation, international laws and best practices. ESA achieve this by participating in relevant national and other internationally recognised bodies thereby promoting good labour relations in the industry (ESES, 2019).

As noted in Chapter 1.6, the economic impact of government support policy to the industry was not analysed in detail and in view of the importance of government interventions, such analysis needs to be expanded through the use of methods such as the Policy Analysis Matrix and economic cost benefit analysis to provide a comprehensive picture (refer to Chapter 6. - recommendations for further research).

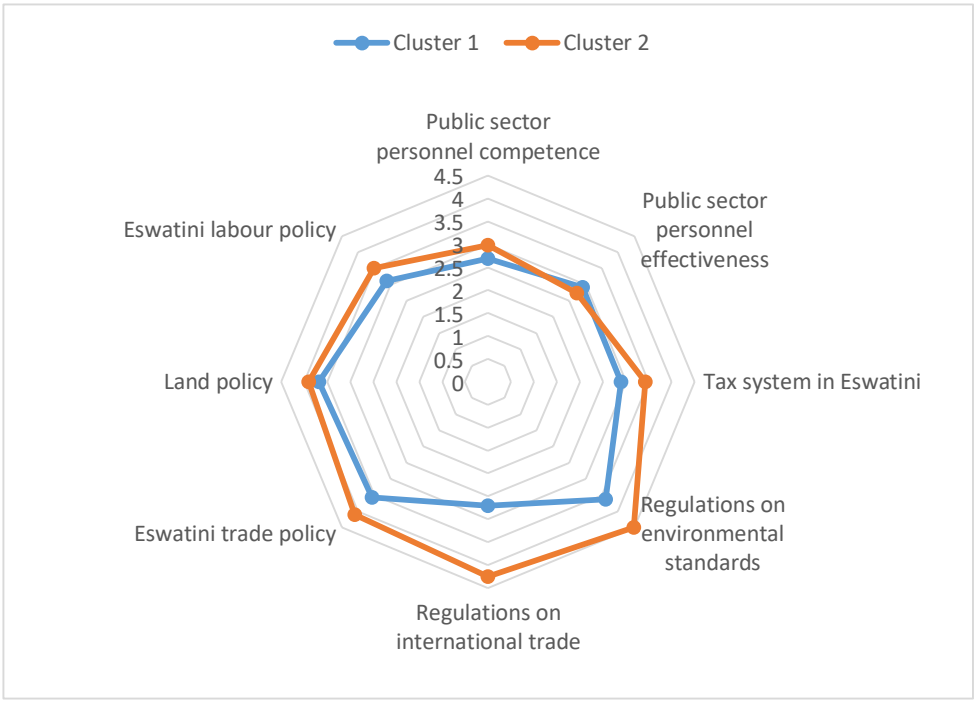

Figure 5.10: The government support and policies in determining the competitiveness of Eswatini sugar industry.

Ratings: 1 = highly constraining; 3 = neutral; 5 = highly enhancing

Source: ESES (2019)

Variation in opinions

To explore the variations in opinions from the survey, the government support and policy factor determinants were identified and the PCA was applied to identify the correlated and uncorrelated factors. The results showed that six out of the eight factors had a consensus in the general industry and the two varied in ratings. The factors with varying views included tax system in Eswatini (0.573) and regulation on international trade (0.587). Both clusters were of the same view of the public sector personnel competency (0.812), public sector personnel effectiveness (0.771), land policy, labour policy (0.665), trade policy (0.706) and regulations on environmental standards (0.665). Since there was a relatively high level of consensus for both clusters, agreement on decision affecting the industry and strategies to improve the performance can be considered.

5.2.6 Chance factors

Chance factors refer to “opportunities”, incidents and external occurrences over which an industry or government do not have direct control, but can influence a firms/industries’ performance (Porter, 1990). There are various chance factors affecting the sugar industry of Eswatini as highlighted by the ESES which were the most constraining to the competitiveness performance of sugar industry.

The prevalence of crime indicated to be the most constraining factor with ratings of 1.41 out of 5 for cluster 1 and have the cost bearing on the operation of the industry. The nature of relevant crime was however, not explored in detail. It was however, agreed that crime has a negative influence on investor confidence (also refer to Madima, 2010).

Another set of factors which was considered to constrain the industry’s competitiveness was health related, notably HIV/AIDS with ratings of 1.89/5 and 1.97/5 for both clusters, respectively. These were considered to affect the operations of the industry since it impacts on the work force stability. The impact of HIV/AIDS on the agribusinesses includes increased absenteeism, loss of experienced and productive stuff, higher labour turn-over, decreased productivity and increased training costs. Strategies on the programmes to improve the situation will be dealt with in Step 5 (Chapter 6).

The Covid-19 pandemic is one of the most recent health threats impacting the sugar industry and its stakeholders, not only in the country, but globally with alarming figures of deaths and people infected daily. People have been put on lockdown in an effort to fight the pandemic and in the process, the sugar industry, which plays a significant role in the national economy, has been adversely affected due to these impacts. The entire sugar value chain is likely to be disturbed due to the pandemic (see recommendation in Chapter 6.5 (vii)).

The uncertainty of the exchange rate of the South African Rand against the US dollar for both clusters indicated to be a constrain to the competitiveness of the sugar industry with ratings of 2.17 out of 5 and 2.57/5 respectively. Fluctuations of the Rand against world major currencies are crucial as the Eswatini sugar industry is export oriented. This will have an influence on the returns of the industry and the economy of the country. A general increase in the currency against other major currencies affects the competitiveness of the industry as profits are reduced, which ultimately lead to scaling down of operations (Dlamini, 2012). As the currency depreciates, Eswatini as an exporter will gain and its competitiveness in the world market will be enhanced. The local stable political environment was viewed to be enhancing the competitiveness of the sugar industry with a score of 3.81 out of 5 for cluster 2, the same factor was somewhat constraining the performance of the industry for cluster 1 with a score rating of 2.69 out of 5. Esterhuizen and Van Rooyen (2008) also pointed out that the

strong Rand was then one of the factors constraining the competitiveness success of the agribusiness in South Africa.

Figure 5.11 revealed all the chance factors that were mentioned in the ESES that influence the competitiveness of the Eswatini sugar industry and the results showed that the chance factors determinant were a constrain to the competitiveness performance with an overall mean of 2.45.

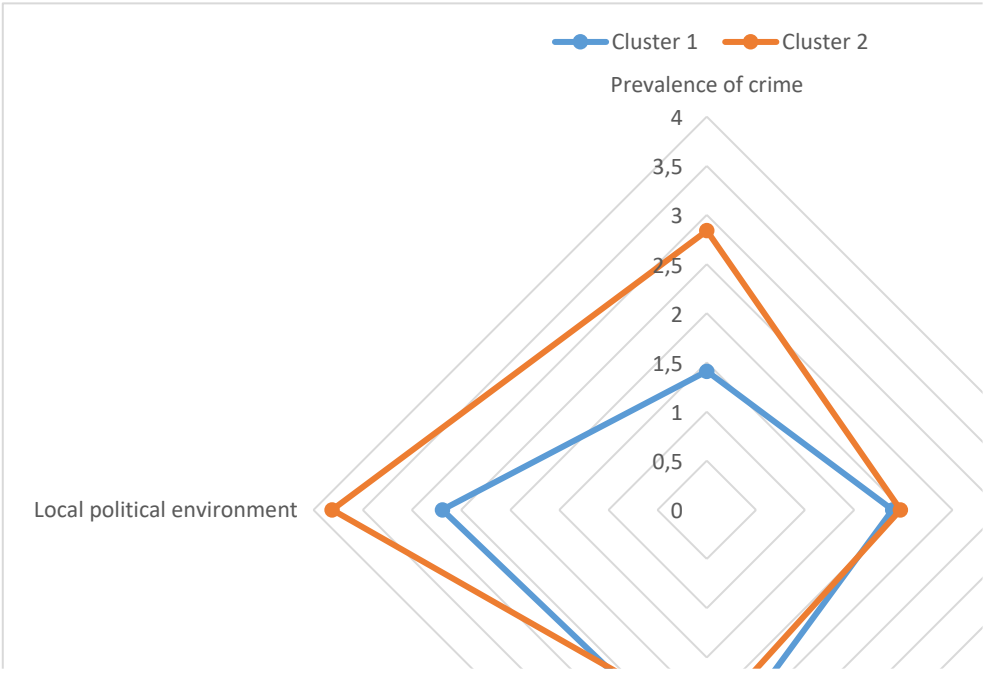

Figure 5.11: The chance factor in determining the competitiveness of the Eswatini sugar industry.

Ratings: 1 = highly constraining; 3 = neutral; 5 = highly enhancing

Source: ESES (2019)

Variation of views

The PCA was applied in this determinant to observe the degree in which the respondents differ in opinions. These views were to check the correlation and uncorrelated factors and the following were identified: prevalence of crime (0.662), HIV/AIDS imposes (0.512), currency exchange rate (0.615) and the local political environment (0.412). Out of the identified factors, three showed consensus while the local political environment indicated variation in opinion. The reasons in the different views are that the players along the value chain respond differently to these identified factors. The primary producers (cluster 1), were of the view that the 1999 land policy for example which has been in a draft form have implications, especially on the Swazi Nation Land (SNL) which is under the management of the chief's and traditional authorities. This affects the small holder producers as the land cannot be used as

collateral to get loans from the financial institutions since rights are not clear. On the other hand, the medium and large producers cannot expand their production on the Swazi Nation Land since most production is under the Title Deed Land. The SNL under traditional authorities cannot be leased or sold. Generally, from the above analysis, this determinant has a negative effect to the industry's competitiveness. This poses a threat to the industry since most of the factors are not within their control.

5.4 Conclusion

This chapter dealt with results and findings as per the application of the first four steps of the analytical framework. The last step of the framework, which is Step 5, will be discussed in Chapter 6. The findings from the trend analysis reflected that though the RTA figures were fluctuating, the industry performed competitively at increasing trends since 2001 internationally compared to countries such as South Africa, and other Sub Saharan African competitors. However, when compared with the international giants like Brazil and Thailand, it was less competitive. Here it must however, be noted that no linear country comparison can be made from RTA values alone, as these only compare a country's competitiveness in an industry relative to the general competitiveness of that country as a whole economy. It however, gives an indication that the Eswatini sugar industry plays a highly important role in the competitive performance of Eswatini, if compared with other sugar producing countries.

To derive the industry's determinants of competitive performance, the Diamond model of Porter's theory was used whereby different underlying factors were identified to either enhance or constrain the competitive performance. These factors were identified and rated by sugar industry participants, were grouped into the six porter competitive diamond determinants namely production factor conditions; demand and market factors; firm strategy, structure and rivalry; related and other supporting industries; government support and policies; and the role of chance factors. The most rated enhancing factor were the demand factors (3.54/5), related and support industries (3.45/5), government support and policy (3.41/5) and the structure and rivalry (3.36/5). Those that were constraining the competitive performance were the production and chance factors. These results imply that the Eswatini sugar industry is generally competitive; and this is backed by the objective time series trade-based measurements.

The Principal Component Analysis was applied to identify the correlated and non-correlated factors from the 48 identified factors and also variation of views was observed and results indicated 18 out of 48 factors differed in opinions.

Analysis was also carried out on the two clusters of the value chain players: cluster 1 being the primary producers of the cane and cluster 2 comprising the agribusiness and the processors. The ratings for the primary producers were relatively low showing a high degree of constraining factors towards the industry's competitiveness. Cluster 2 is business oriented and deals with trading and market more than cluster 1, hence the differences in views with regard to demand factors. The difference in opinions will require in depth strategies to improve consensus within the value chain actors, which will be proposed in Step 5 in the next chapter.

CHAPTER 6: SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

6.1. Introduction

The research stipulated in the previous chapters covered four of the five steps of the proposed analytical framework. The sections below highlight key findings and research results, provide some strategies (Step 5) of the analytical framework and recommendations that need to be adopted by the industry to expand and promote its competitiveness. A conclusion on the research hypothesis and questions posed in Chapter 1 is also extrapolated on. Some topics for further research to improve the measurement and analysis of competitive performance are also listed.

6.2. Summary of findings

The first chapter of the research covered the background to the problem statement: whereby the Eswatini sugar industry, as an industry competing in the international sugar market, is put under threat due to market forces, trade liberalisation and abolishment of trade agreement preferences. This has affected the price and volume exported which have been declining over the years. How can these factors be related to competitiveness, as the key for a sustainable Eswatini industry? This problem statement prompted the need for the study. This chapter also outlined the objectives, research questions and hypotheses of the study to allow this problem to be defined and analysed comprehensively.

Chapter 2 of the study explored the theoretical construct and concept of competitiveness in the agri-food industry and gave an overview of the relevant literature on theories from which an appropriate definition of competitiveness in the context of the Eswatini sugar industry was identified. The different methods, in line with this definition used to measure competitiveness were discussed and related studies that were previously conducted in relation to agri-food competitiveness were reviewed to set an appropriate theoretical construct for the study.

Chapter 3 proposed a ‘five-step’ analytical framework, derived from the proposed theoretical construct, and explained the methodology and data used in the study.

Chapter 4 provided an overview of the global competitiveness of the Eswatini economy and described the Eswatini sugar industry. An overview in terms of the production and volumes, quantity exported,

areas where the sugar cane is mostly grown, the value chain and institutions concerned and both domestic and international markets for the sugar was provided.

In Chapter 5, the findings were presented based on the first four steps of the analytical framework.

Findings: competitiveness within the context of the sugar industry was defined in the first step and the definitions of Freebairn (1986), as adapted by Esterhuizen (2006) and Van Rooyen et al. (2011), were used in this study: ‘an industry is considered to be competitive when it continuously trades its products competitively, on sustainable basis, in both the domestic and global markets while earning at least the opportunity cost of resources used’. This definition set the analytical framework for the measurement and analysis of the competitive performance of the sugar industry.

Step 2 of the study involved empirically measuring the sugar industry using the RTA technique. This method was an improved version of Balassa (1965) and expanded by Vollrath (1991) to measure the competitiveness of traded products as it provides a wider basis for trade viz exports and imports. To obtain the RTA values, FAOSTAT and Trademap (ITC) data from the period of 1991 to 2019 was used. The results reflected that the Eswatini sugar industry is competitive, be it fluctuating in the international business environment.

Discussions with industry were made based on the revealed trend lines of which three phases were identified and analysed. In phase 1 (2001 - 2007), which is generally increasing with positive figures ranging from 1.5 to 2.9 for the FAOSTAT and 1.8 to 4.6 for ITC. During phase 2 (2007 - 2012), fluctuating and declining competitive performance with a bubble type trend was noted with RTA values ranging between 3.8 to 3.4 due to economic meltdown and removal of the preferential trade arrangements. In phase 3 which is recovery and sustained increasing competitiveness from 2013 onwards was observed with rising RTA values 2.9 to 4.5 respectively.

The Eswatini sugar industry was also compared, on a relative basis, with its rivals internationally regarding the relative competitiveness in context of each particular economy namely, Brazil, Thailand, South Africa, Mozambique, Kenya, Malawi and Zimbabwe. Brazil and Thailand revealed to be the relatively most competitive as opposed to the other countries. Eswatini was ranked third after Thailand in terms of competitiveness. It performed competitively at increasing trends since 2001 compared to countries such as South Africa, and other Sub Saharan African competitors. However, when compared with the international giants like Brazil and Thailand, it was less competitive.

The third step involved gathering views and informed opinions from key stakeholders and experts on the various factors influencing the competitive performance through the Sugar Executive Survey (ESES), focus group discussions and personal interviews were used from the ESES, 48 factors were

identified and analysed. These factors were rated using a 5-point Likert scale where 3 was considered neutral, below 3 was constraining and above 3 was considered to enhance the industry's competitiveness. The respondents were then classified into cluster 1 which mainly comprised of producers of the cane and cluster 2 consisted of processors, marketers and input providers. For the general industry, 33.3% of the factors were found to constrain the competitiveness of the industry, while 62.5% were observed to enhance the industry and 2.1% had a neutral influence. The relative impacts of different factors were however not weighted.

Step 4 of the analysis involved grouping the 48 factors identified by ESES into the six major determinants of competitiveness according to Porter's Competitive Diamond model (Porter 1990; 1998). The determinants of competitiveness were: production factor conditions, demand and market conditions, related and other supporting industries, firm strategy, structure and rivalry, government support and policies and the chance factors. Using the Porter's Diamond framework, the determinants were then analysed. Respondents were categorised into two clusters and the general industry making up the sugar industry. Cluster 1 consisted of primary producers while cluster 2, comprised the agribusiness. The findings on the Porte's Diamond indicated that cluster 1 showed relatively low with a high degree of constraining factors than cluster 2 towards the competitive performance of the sugar industry.

The findings for the general sugar industry revealed that demand factors (3.54/5), related and support industries (3.45/5), government support and policy (3.41/5) and strategy, structure and rivalry (3.36/5) were enhancing to the industry's competitiveness. The production and chance factors revealed to constrain the industry with 2.89/5 and 2.45/5 values, respectively. To identify the factors that are highly correlated and uncorrelated, the principal component analysis was applied and 32 of the factors were viewed to be highly correlated (similar/consensus views). Further analysis was applied to the factors using the Cronbach's alpha test to compute the reliability and the coefficient was 0.700 in all the subjected factors indicating a high level of internal consistency.

Step 5 of the analysis will be completed in this chapter viz to propose strategies based on the findings and analysis from Step 4 that could improve the competitiveness performance of the sugar industry.

6.3 Proposing industry level strategies to improve competitiveness (Step 5)

It can be concluded from the various analysis conducted that the competitiveness of the sugar industry depends on a wide range of factors, some constraining; some enhancing. These would have to be accommodated in a comprehensive and integrated strategic approach. This section is aimed at

formulating recommendations that can be employed in such a strategy to improve competitiveness in the sugar industry of Eswatini.

Porter (1990) argued that an industry can be more competent if these determinants are strategically managed. The strategic recommendations in this section have been derived from the analysis of SES information and through interviews and focus group discussions with experts and key stakeholders.

6.3.1 Focus sessions and expert discussions

Two focus group sessions were conducted comprising twelve participants. The factors contributing to the competitiveness of the industry were identified and the possible strategies that could be employed by the industry in the near future. Session two of the discussions involved summarising the items based on the information and analysis obtained from the first session. Respondents were grouped into two clusters; producer/farmer oriented (cluster 1) and business oriented (cluster 2) were requested to rate the responses. This enabled a “value chain” view of competitiveness. The information gathered from the discussions was used to analyse the results of the SES, together with the RTA trends.

As discussed in Chapter 5, the findings for cluster 1 players (farmers) generally scored lower ratings for the different factors with an average of 3.04/5. Responses for cluster 2 (agribusiness, processors) indicated a higher rating of 3.29/5, which was slightly above neutral. When cluster 1, cluster 2 and the general industry were compared, findings indicated similarities/symmetry in their views and were of the view that the demand factors had the most positive influence towards the competitive performance of the industry. The cane producers in cluster 1 experienced more constraining factors as opposed to cluster 2 possibly because they are involved in the primary production of the cane and a larger percentage consists of smallholder farmers.

The high rating of government policy and support interventions influencing competitiveness of the industry must also be noted. No detailed policy analysis was however conducted in this study. Recommendations on additional research required in this context are proposed in Section 6.5 below (also refer to comments on this matter in 1.6 and 5.5.2.5). This may require social-economic cost benefit analysis and policy analysis matrix applications.

6.3.2 Strategic recommendations to improve the industry’s competitive performance

The study will focus on possible industry-wide strategies for the factors that are negatively influencing the competitive performance of the industry and how it can be improved. It will also suggest strategies to maintain and strengthen the enhancing factors. The recommendations presented were derived from

the focus group discussions whereby informed views were expressed on the strategies that could be employed. These will be based on the Porter's Diamond model applications according to the different clusters.

It is recommended that the Eswatini sugar industry consider these recommendations, as set out in Table 6.1, for further action.

Table 6.1: Fifteen proposed strategies at industry level

Production Factor	
Constraining factor	**Proposed strategies**
Cost of technological development and innovation is extremely high.	Focus on technology adaptation and adoption from globally advanced industries; encouraging investments in technological innovations through collaborative public and private initiatives to expand the scope and range of technological affordability; collaborative technical information management sharing between stakeholders and clients along the global value chain network focusing on new varieties, climate change, productive cane varieties and methods of cane husbandry.
Cost of skilled labour is high as the skilled employees are remunerated on a high scale contributing to high production costs.	Investing in high skill training and certification of more local people which will ultimately sustain supply and lead to increased productivity. Ensuring that training and development is provided continuously in the different skills along the value chain through vocational training workshops and school internships.
Cost of capital- it was mentioned that the financial institutions provide loans, however at a high interest rate.	Structuring 'start-up' funds at a developmental focused interest rate for the value chain players, the smallholder farmers, should be considered by the financial institutions. These would allow for restructuring and the

	introduction of innovation, which will improve production practices, climate change research etc.
Cost of infrastructure – most of the equipment used by the mill is imported, which is very costly for the industry. Also, maintenance of the installed infrastructure (irrigation systems) is expensive. These impede on the competitive performance of the industry.	Focusing on strategic partnerships between the private and public sector for investments. Notably, a cost benefit analysis could be conducted in an attempt to gauge whether economically justifiable proposals could be developed to fund this project or re-allocating resources from the public sector.
Unskilled labour is experienced as being readily available; however, their level of skill competency is judged to be low. This is simply because they are hired on seasonality basis, hence basic training is required, as not all return in the following seasons.	Longer term contracts and skills advancement are essential aspects in the industry, as it will improve the competency of the workforce. For retaining the seasonal workers, certificate of competency should be awarded to those who have undergone the training in the production of sugarcane. This would then be preferred for future employment, creating incentive to improve the required skills and a more sustained workforce could be established as such.
Demand and market conditions	
Health concerns and awareness creation have been on the rise regarding the consumption of sugar. These developments pose a challenge in the sector market growth as the customer's eating trend or preferences are now changing.	**Research and development:** diversification of the cane product into other products to meet market demand. The industry can consider engaging into new technologies to manufacture new innovative sugar products which include energy production (ethanol and electricity production), production of bioplastics for packaging material as well as value added products. There is a need for government to put in place policies and programmes that will accommodate and address the consumers' preferences and health needs, for example

	sugar fortification.
Related and support industries	
The cost of transporting sugarcane from the farm gate to mills is high, due to poor feeder roads to the farms, mode of transporting is also expensive as distance between mills and cane fields is long, impacting or hiking the production costs.	Improving transport infrastructure and services from production centers to the markets can enhance the competitiveness of the industry. These include road improvement which relates to the development of new service roads from the farms to the mills. This will reduce transportation costs, which is a major negative contributing factor to the sugar industry in particular cane transportation. This requires government and the private sector to partner in developing effective policies and sustainable solutions.
Costs of primary input supplies which include fertilizers, pesticides are high	**Value chain cooperation:** it is proposed that the smallholder farmers be better accommodated in the value chain through strengthening the different parties and institutional relationship. Contractual relationships should be investigated in this context (Masuku, et al, 2003). Research and development: the collaboration with government research institutions and private organisations that is existing should be strengthened continuously. This will assist in informing policy makers on the decision or actions to be taken on issues regarding the sugar industry which include; development of new varieties that will respond to climate change, customer preferences and trends.
Strategy, structure and rivalry	
Entry of new competitors in the world market pose a challenge to Eswatini sugar industry. As more countries gain entry to the global market, an	Product differentiation and brand identification: the industry should continue to focus on distinguishing its sugar from that of its rivals to

oversupply is incurred, thus causing the sugar price to collapse.	produce a unique product. Consider for example “green technology” and related promotion and certifications.
Information sharing between the value chain actors.	Improving channels of information between the sugar value chain players to assist in strategic choices and effective planning purposes for example, good production budget recommendation, input cost information among others.
Competition in the local market; the cheap imports of sugar which are flooding the market from non-SACU states which has resulted to the sugar being sold at lower prices. This reduces the returns significantly.	Government, together with their SACU partners, must ensure some degree of protection against imports through the enforcement of strict policies to protect the domestic industry.
Government support and policy	
Public sector personnel competence - extension services, in particular specialising on the sugarcane agronomy, is not enough to provide technical backstopping for the sugar industry.	Developing the skills of the public employees to continuously improve and adapt the competencies of the workforce and build human capital.
Policy development and analysis capacity.	The sugar industry relies heavily on government support and policy for its competitive performance. Policy analysis to determine the social and economic justification and benefits and costs of such interventions to be considered in view of its sustainability and affordability.
Taxation system	Policies that will promote friendly environment for investors by reducing taxes for new companies,
Chance factors	
Health issues: HIV/AIDS, Covid-19 and other health related issues that may emerge have negatively affected the industry interms of production.	Provide certification and wellness programmes which will educate the workers on prevention, treatment and palliative care.
Prevalence of crime- theft of the cane sugar in the fields which reduce the yields harvested is a	Improving intelligence, raids, prosecutions and crime prevention awareness campaigns to

challenge.	fight corruption and catch criminals.
The uncertainty and fluctuations of the exchange rate of the local currency against the world major currencies showed to constrain the competitiveness of the sugar industry.	Employ risk management strategies to help the industry to deal with such fluctuations which affects prices of both imported production inputs and product prices and returns.

Source: Author's own research

Expanding recommendations to the value chain clusters

The overall findings between the producers and agribusiness reflected alignment. For the Eswatini sugar industry to sustain its competitiveness, it is important that the collaboration between all the value chain players be strengthened through information and business intelligence sharing, technological innovations and policy development and coordination between industry and government. To improve the performance of the whole system, value chain players should be willing to share information pertaining the industry to reduce some uncertainties. New product development also needs attention to counter 'anti-sugar movements' and to grow local market demand. I t is also important that public, private partnership is encouraged between the value chain players to discuss issues that will improve the competitiveness of industry.

Only the unique and specific strategic proposals, not listed above will feature below for each cluster indicating some new aspects will be listed below per cluster to improve performance.

Table 6.2: Proposed strategies for cluster 1 (producers)

Government support and policy	
Regulations on international trade - the economic reforms with the European market have impacted on the returns of Eswatini sugar.	Government should engage in trade negotiations that could reduce trade barriers across countries. Boost confidence in trade and global markets by improving transparency about trade–related policy actions and intentions. Public-private partnerships: Collaboration between the government and the private sector is very crucial to identify significant issues affecting competitiveness of the sugar industry. Engaging the two parties will assist to determine strategies

	that could be employed to improve or strengthened the competitiveness of the Eswatini sugar industry. Political support for growth of the sugar industry: the socio-economic status of the sugar industry attracts interest from economic and political perspective; hence its importance should be recognised.

Source: Author's own research

Table 6.3: Proposed strategies for cluster 2 (agribusiness)

Constraining factors	**Proposed strategies**
Demand factor	
Growth in local market is slow for new technology impacting more on the cluster 2 respondents.	To increase growth, the industry needs to expand its local market scope for innovative products and services, taking into consideration the consumer preferences and trends i.e. product diversification.

Source: Author's own research

6.4 Validating the hypotheses

In the first chapter of the research, the hypotheses to be explored were established. Hence, the aim of this section is to consider and confirm or reject these hypotheses. The first hypothesis stated that; the competitive performance of the Eswatini sugar industry is not only dependent on single factors affecting trade performance, such as market prices for produce; or production cost; or exchange rates, or climatologically factors. It is rather determined by sets of enhancing and constraining factors affecting behaviour through the industry value chain and its different components, creating or reducing competitive advantages; factors related to amongst others production factors endowments and productivity levels; domestic and international market conditions and related market strategy; the strength of supporting industries; government support; and factors such as exchange rate fluctuations, health situations, etc.

The results firstly revealed that the industry has been generally competitive in the global market, but rather definite trends could be identified.

- A large number (48) of factors were identified that are influencing the competitive performance; and that different players in the value chain do agree on the impacts of the most of these i.e., a large degree of consensus in the industry exists about the multiple set of factors impacting on competitiveness. These factors were effectively clustered in to the determinants of the Porter Competitive Diamond model and related to each other, supporting the first hypothesis. From this, and through an integrated sugar value chain interaction, enabled the generation of a number of industry based strategic proposals, validating the stated second hypothesis i.e., a complex, coordinated and integrated set of strategies are required at the industry value chain level to enhance competitive performance.

The hypotheses that were established for this study have thus proven to be a true reflection, hence it can be accepted.

6.5 Recommendations for further research

The following topics can be considered as an agenda for future research to strengthen the analytical framework i.e. the measurement and analysis to support the competitive performance of the Eswatini sugar industry.

(i) Extended value chain analysis focused on the competitiveness of the industry: The study noted the need for improved value chain cooperation and coordination but did not conclude the performance of role players in the value chain individually and how to enhance competitive performances. The Porter Competitive Diamond model methodology could be extended to do such and a more detailed analysis of the different actors and functions in the Eswatini sugar industry value chain. Webber and Lambaste (2011), also identify a range of methods and systems that can be conducted to improve the efficiency and effectiveness of a value chain, especially among smallholders. These, among others, include formulating cognizant strategies along the value chain, conducting benchmarking and gap assessment of the value chain by describing on how to evaluate and compare a value chain's performance and identifying support services needed for the value chain. This will require inputs from all role/ players – the farmer and support system to the consumer, with reference to the various determinants of the Porter Competitive Diamond model i.e., at each of the links in the chain. This will help provide a stronger indication of where the weak/strong links in the value chain lie that affect the overall competitiveness of the sugar industry. A case that will need enquiry will be the linkages between sugar smallholders and the value chain.

(ii) The impact of support infrastructure development: This study did not take into consideration the aspect of cost benefit analysis with regard to various options for future public sector

supported infrastructure development, yet it is an essential component for the public sector (government) and also industry players to make decisions on investment based on appropriate costs, resources and the risk involved, related to expected social, economic and financial benefits (Gittinger, 1982; Cellini & Kee, 2013). This approach is crucial for the sugar industry to apply as it further develops its infrastructure. This in turn will give tangible outcomes that can be used to develop realistic conclusions based on the feasibility of the project and to justify the allocation of public sector resources to benefit this industry. This needs to be considered for future probing.

(iii) Government interventions and policy analysis, considering the economic efficiency argument: this aspect links to the previous topic ass it considers the support and interest of the public sector and government to the Eswatini sugar industry. The sugar industry worldwide is noted to be in a long-term decline with stronger consumer pressures, health concerns and even government regulations discouraging sugar consumption. Generally, the sugar industry is also supported through government pricing measures and some form of protections. As is happening in the Eswatini industry (refer to p. 54 in Chapter 4), the economic efficiency position of such 'administratively supported' industries may thus not correspond to business related competitive ratings i.e., economic vs. business ratings. Such discrepancies may influence the long-term sustainability of the industry and may need new policies and strategies to maintain a competitive position in evolving markets. While it is not in the scope of this study to conduct a policy analysis on the Eswatini sugar industry (refer to Chapter 1.6) and to consider the gap between economic efficiency and competitive relevance (by inter alia readjusting RTA's based on market price values to economic RTA values using shadow pricing and opportunity cost valuations), it proposes an important research theme, linking policy analysis to competitive analysis for strategy development in the Eswatini sugar industry.

(iv) The evolving market and demand conditions of the sugar industry: Porter (1990), mentioned that demand conditions are essential in competitiveness. Consumer preferences are based on health and lifestyle changes over time therefore, it would be necessary in future to explore what consumers want at that time as demand conditions is an important determining factors to strategically structure the Eswatini industry to perform accordingly. The 'anti-sugar' notion also needs to be noted and related aspects such as 'sugar tax'. Adapted marketing schemes, new, market focus, product developments and innovative production methods related to the 'green economy' needs consideration.

(v) Climate change: The sugar industry has, in the past, and will continue to be affected by changes in climate conditions and these effects are most likely to get worse soon. This poses a challenge to the entire sugarcane producing country and calls for researchers to continue employing multidisciplinary tactics that will mitigate the impact.

(vi) Measuring competitiveness: The study used only the RTA method to measure the competitiveness of the sugar industry. This method only considers the export and import values, yet other methods that will take into account the local (and informal) trade is imperative to add to a comprehensive picture of competitiveness.

(vii) Health issues and the emergence of Covid-19 in the sugar sector: from a Porter Competitive Diamond perspective this is a typical chance determinant factor. Covid-19 is clearly adversely affecting the sugar industry stakeholders, stating various ways as discussed in section 5.5.2. 6. This aspect; however, was not analysed in any depth, but it can be expected to reflect in future RTA's and ESES's. Therefore, there is a need for this pandemic to be considered in future research to assess the impact on the industry and the economy, respectively, and explore strategies that could be employed to curb the situation. The Covid-19 experience should be considered to prepare for future type of occurrences.

6.6 Conclusion

The study focused on analysing the competitive performance of the Eswatini sugar industry and the major findings were that the industry was generally competitive in the international trade market. The RTA technique was used to measure the competitive performance trends over time from 2001 to 2019, which was obtained from FAOSTAT and ITC database. Eswatini was compared with other producing countries namely, Brazil, Thailand, South Africa, Malawi, Kenya, Zimbabwe and Mozambique. Eswatini ranks third to Thailand, and when compared to its African rivals, proved to perform better. Although, the results were positive, other qualitative methods (ESES) were employed to determine the factors influencing the sugar industry.

Various factors were identified through the ESES and clustered into Porter's determinants influencing the industry's competitive performance. The results indicated that four out of the six determinants enhanced the industry's performance. These were the demand factors, related and supporting industries, government support and policy and lastly the strategy structure and rivalry. The factors that constrained the industry's performance were the production and chance factors. This confirmed the hypothesis that the Eswatini sugar industry's performance is influenced by a range of factors which could be either positive or negative.

From the analyses and findings of the research, some strategies were proposed, and recommendations were made for further studies. It was proposed that for the Eswatini sugar industry to sustain its competitiveness, it is important that the collaboration between all the value chain players be strengthened through information and business intelligence sharing, technological innovations and policy development and coordination between industry and government.

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APPENDIX: A QUESTIONNAIRE

Survey questionnaire on analysing the competitive performance of the sugar cane industry in Eswatini

Dear Sir/Madam

You are kindly requested to assist by completing the attached questionnaire. This survey is part of a research study that is presently undertaken to analyse the competitive performance of the sugar cane industry. The research is aimed at generating important new intelligence to inform government, as well as other key industry players, on policies and strategies that must be developed to properly respond to identified challenges and opportunities.

Your company has been selected to provide vital information to assess competitive conditions in the industry. Your expert opinion is therefore essential in bringing light to competitiveness issues that are essential for the country and the sector in which your company operates. The questionnaire has been scientifically designed according to Porter's method (The competitive advantage of Nations, 1990, 1998) and will ensure that an accurate picture of the current state of affairs is reflected in terms of factors influencing the competitiveness of the industry.

The questionnaire will take approximately 20 minutes to complete. Most questions in this survey request you to mark a box (using an X) based on your opinion. The questions are designed using the Likert scale.

Where:

Scale	Meaning
1.	Agree wholeheartedly that the factor constrains competitiveness
2.	Somewhat agree that the factor constrains competitiveness
3.	Indifferent between the two answers
4.	Somewhat that the factor enhances competitiveness
5.	Strongly agreed that the factor enhances competitiveness

Note: Kindly make a cross on only one number per question.

Please receive our assurance that all responses will be treated with high confidentiality. Information obtained from this survey will only be used as a group not on an individual basis. Kindly complete the

questionnaire as soon as possible, once completed please kindly contact Xolisiwe Simelane at +268 76039618 to collect it.

You are kindly requested to be objective and thoughtful when answering your questions. We thank you in advance for your time and hope you will assist in answering the questions.

Kind regards,
Xolisiwe Simelane

PRODUCTION FACTOR CONDITIONS

1.	The general infrastructure used by your organisation is:	Poorly inefficient	1	2	3	4	5	Developed
2.	The cost of infrastructure is:	Not affordable	1	2	3	4	5	Affordable
3.	Unskilled labour (manual labor, drivers, and cleaners) is:	Difficult obtain	1	2	3	4	5	Easy to obtain
4.	Unskilled labour is:	Not Productive	1	2	3	4	5	Highly productive
5.	The cost of unskilled labour is:	Less expensive	1	2	3	4	5	Very expensive
6.	Skilled labour in Eswatini is:	Difficult to obtain	1	2	3	4	5	Easy to obtain
7.	Skilled labour (officers, machine operators) in Eswatini is:	Poor quality	1	2	3	4	5	High quality
8.	The cost of skilled labour is:	Too expensive	1	2	3	4	5	Affordable
9.	The cost of doing business is:	Extremely high	1	2	3	4	5	Very affordable
10.	Quality of technology in Eswatini:	Difficult to obtain	1	2	3	4	5	Easy to obtain
11.	The cost of technology:	Extremely high	1	2	3	4	5	Affordable
12.	Climate change for production:	Adverse	1	2	3	4	5	Favorable
13.	Water in Eswatini is:	Scarce	1	2	3	4	5	Available
14.	The cost of water is:	Extremely high	1	2	3	4	5	Affordable
15.	The milling factories are:	Efficiently and effectively	1	2	3	4	5	Not efficient and effective
COMMENTS:								
A. DEMAND CONDITIONS								
1.	Local buyers are:	Unsophisticated	1	2	3	4	5	Knowledgeable and innovative
2.	Adoption of the product by local buyers:	Slow to adopt	1	2	3	4	5	Adopts easily
3.	Local buyers concern on environmentally friendly product:	Not at all	1	2	3	4	5	Very important
4.	The local market size:	Too small	1	2	3	4	5	Large

5.	The growth in the local market is:	Too slow for investment in new technology	1	2	3	4	5	Fast enough for investment in new technology
COMMENTS: Other demand factors that affect competitiveness:								
B. **RELATED AND SUPPORTING INDUSTRY CONDITIONS**								
1.	Availability of credit or finance in Eswatini:	Difficult to obtain	1	2	3	4	5	Easy to obtain
2.	The cost of financing the business is:	Extremely high	1	2	3	4	5	Affordable
3.	The cost of transport is:	Extremely high	1	2	3	4	5	Affordable
4.	The costs of inputs supplies:	Extremely high	1	2	3	4	5	Affordable
5.	The financial institutions are:	Constraint to company's competitive success	1	2	3	4	5	Enhancement of company's competitive success
6.	Scientific research institution:	Non existent	1	2	3	4	5	Best
7.	Local supplies availability:	Mostly non existing	1	2	3	4	5	Numerous
8.	Local supplies efficiency:	Inefficient	1	2	3	4	5	Efficient
9.	Local supplies sustainability:	It is a problem	1	2	3	4	5	No problem
10.	Electricity supplies:	Sufficient	1	2	3	4	5	Unreliable
11.	Telecommunication and internet services are:	Constraint business	1	2	3	4	5	Enhance business
12.	Quality and trustworthiness:	Non existent	1	2	3	4	5	At its best
13.	Training and skills development:	Inaccessible and irrelevant	1	2	3	4	5	Accessible and relevant
14.	Regulation standards (safety, quality of product) are:	Fully enforced	1	2	3	4	5	Not enforced
D.**FIRM STRATEGY, STRUCTURE AND RIVALRY CONDITIONS**								
1.	The source of competition:	Imports	1	2	3	4	5	Local firms
2.	Entry of competitors:	Never occurs in local market	1	2	3	4	5	Is convenient
3.	Spending on research and development:	Does not spend	1	2	3	4	5	Spend heavily

4.	Environmentally friendly product:	Not very important	1	2	3	4	5	Most important
5.	Production processes:	Use obsolete technology	1	2	3	4	5	Apply the best and most efficient technology
E. GOVERNMENT SUPPORT POLICIES CONDITIONS								
1.	Public sector personnel competence:	Lower than the private sector	1	2	3	4	5	Higher than the private
2.	Public sector personnel effectiveness:	Constrain service delivery	1	2	3	4	5	Enable service delivery
3.	The tax system in Eswatini:	Hinders business investment	1	2	3	4	5	Promote investment
4.	Regulations on environmental standards:	Not enforced	1	2	3	4	5	Enforced
5.	Regulations on international trade:	Restricts	1	2	3	4	5	Enable
6.	Eswatini trade policy:	Constrain business ability to compete	1	2	3	4	5	Enhance ability to compete
7.	Land policy in Eswatini:	Constrain business operation	1	2	3	4	5	Enhances business operation
8.	Labour policy in Eswatini:	Constraint and inhibit employment	1	2	3	4	5	Create a good working place
F. CHANCE FACTORS								
1.	The prevalence of crime imposes:	Significant cost on business	1	2	3	4	5	Does not
2.	HIV and AIDS impose:	Significant cost on business	1	2	3	4	5	Does not
3.	The current exchange rate:	Constraints to your business	1	2	3	4	5	Enhances your business
4.	Local political environment:	Undermine the company's competitiveness	1	2	3	4	5	Enhances competitiveness
GENERAL QUESTIONS - In your opinion:								

1. Any strategy or recommendations that could enhance the competitiveness of the sugar industry?

2. What are the main factors that enhance the competitive performance of your industry

3. What are the main factors that constrain the competitive performance of your industry?

4. How the does the government influence the competitiveness of your country?

END – THANK YOU SO MUCH FOR YOUR TIME.

APPENDIX: B PRINCIPAL COMPONENT ANALYSIS
Production Factors

Communalities

	Initial	Extraction
Quality of skilled labour	1.000	.745
Weather conditions	1.000	.489
Availability water	1.000	.758
Cost of water	1.000	.547
Milling factories effective	1.000	.282
Availability of capital	1.000	.759
Availability skilled labour	1.000	.495
Cost technology	1.000	.374
Cost skilled Labour	1.000	.601

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.002	22.247	22.247	2.002	22.247	22.247	1.812	20.134	20.134
2	1.769	19.650	41.897	1.769	19.650	41.897	1.663	18.473	38.607
3	1.280	14.227	56.124	1.280	14.227	56.124	1.577	17.517	56.124
4	.958	10.649	66.773						
5	.881	9.794	76.567						
6	.742	8.239	84.806						
7	.563	6.251	91.058						
8	.471	5.237	96.294						
9	.334	3.706	100.000						

Extraction Method: Principal Component Analysis.

Demand Factors

Communalities

	Initial	Extraction
Local buyers sophisticated	1.000	.505
Local market size	1.000	.245
Growth local market	1.000	.463
Environmentally friendly products	1.000	.418
Growth international	1.000	.730

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.361	47.228	47.228	2.361	47.228	47.228
2	.971	19.416	66.644			
3	.924	18.473	85.117			
4	.536	10.718	95.835			
5	.208	4.165	100.000			

Extraction Method: Principal Component Analysis.

Related and Support

Communalities

	Initial	Extraction
Transport costs	1.000	.838
Availability local supplies	1.000	.471
Scientific Research	1.000	.679
Telecommunication internet	1.000	.681
Regulation standards	1.000	.822
Input supply cost	1.000	.598
Electricity supplies	1.000	.807
Local suppliers' sustainability	1.000	.766

Extraction Method: Principal Component Analysis.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.800	35.004	35.004	2.800	35.004	35.004
2	1.765	22.057	57.061	1.765	22.057	57.061
3	1.097	13.714	70.775	1.097	13.714	70.775
4	.839	10.492	81.266			
5	.661	8.264	89.530			
6	.413	5.158	94.688			
7	.249	3.116	97.805			
8	.176	2.195	100.000			

Firm, Strategy, Structure and Rivalry

Communalities

	Initial	Extraction
Entry of new competitors	1.000	.602
Competition international market	1.000	.571
Spending research development	1.000	.648
Environmentally friendly product	1.000	.552
Production processes	1.000	.759
Competition local market	1.000	.725

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.344	39.068	39.068	2.344	39.068	39.068	2.198	36.636	36.636
2	1.513	25.219	64.287	1.513	25.219	64.287	1.659	27.651	64.287
3	.863	14.384	78.671						
4	.531	8.845	87.517						
5	.408	6.807	94.323						
6	.341	5.677	100.000						

Extraction Method: Principal Component Analysis.

Government and Policies

Communalities

	Initial	Extraction
Public sector effectiveness	1.000	.771
Public sector competency	1.000	.812
Regulations environmental standards	1.000	.613
Regulations on international trade	1.000	.587
Trade policy	1.000	.706
Labour policy	1.000	.665

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.825	47.080	47.080	2.825	47.080	47.080	2.539	42.316	42.316
2	1.330	22.162	69.243	1.330	22.162	69.243	1.616	26.927	69.243
3	.620	10.331	79.574						
4	.518	8.629	88.203						
5	.438	7.296	95.499						
6	.270	4.501	100.000						

Extraction Method: Principal Component Analysis.

Chance Factors

Communalities

	Initial	Extraction
Crime prevalence	1.000	.662
Local political environment	1.000	.787
Current exchange rate	1.000	.615
HIV/AIDS impose	1.000	.512

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.046	34.881	34.881	1.046	34.881	34.881	1.045	34.821	34.821
2	1.017	33.913	68.793	1.017	33.913	68.793	1.019	33.973	68.793
3	.936	31.207	100.000						

Extraction Method: Principal Component Analysis.